The Far Eastern Review

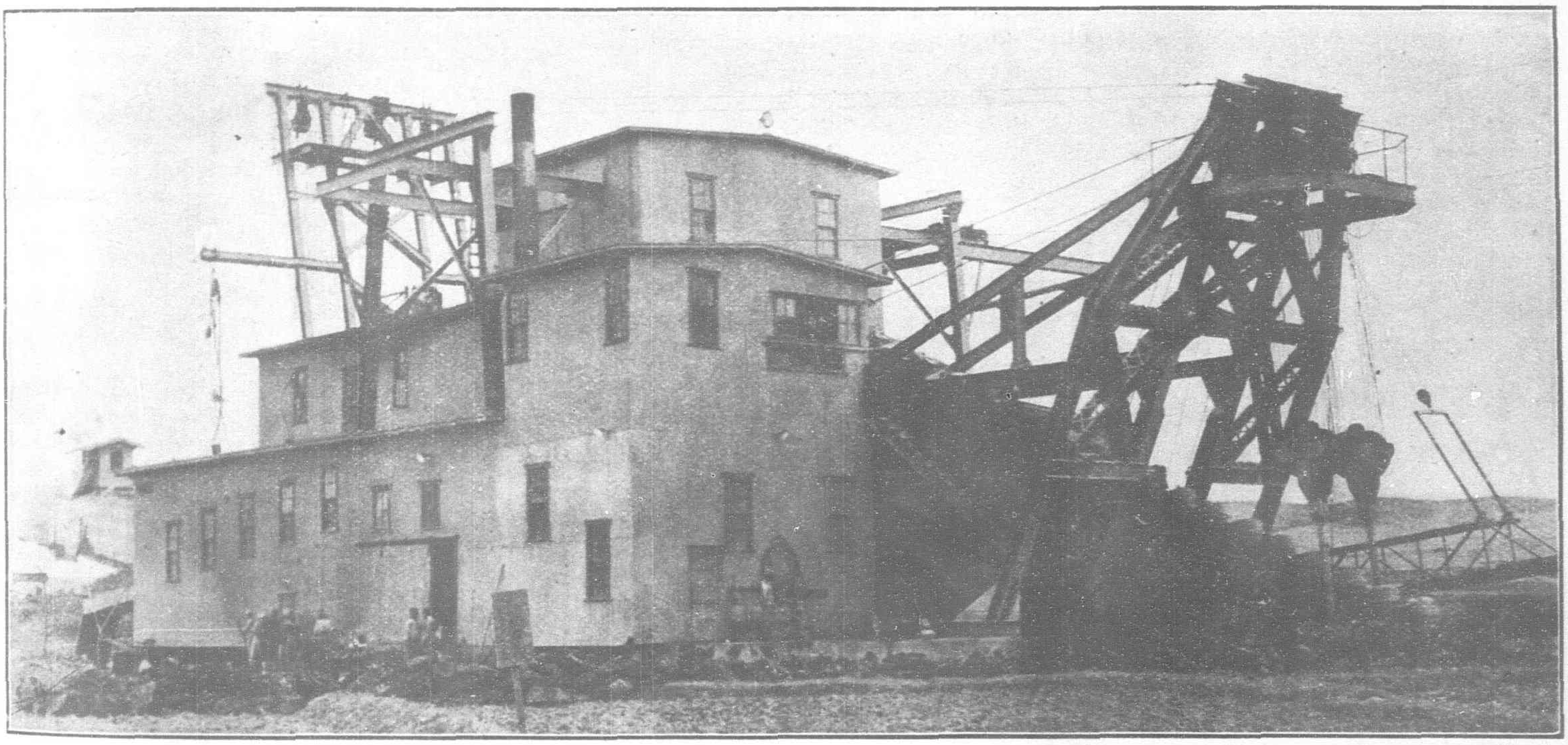
ENGINEERING FINANCE COMMERCE

VOL. XIV SHANGHAI, SEPTEMBER, 1918 No. 9

Dredging for Gold in Korea

A Successful Experiment on the Chiksan Concession

Placer mining has been understood and practiced throughout the Far East for several milleniums. There is scarcely a stream in China upon the banks of which one cannot find workmen industriously washing sand and mud for gold. The returns upon the labour expended are, however, very meagre almost everywhere and in all eastern Asia there is scarcely a placer mining field which could attract and hold the class of prospectors which at different periods developed the Australian and the Alaskan gold fields. The sight of coolies washing gold on the lower reaches of the Yangtze river has led people to surmise that somewhere up stream the sands must be enormously rich in gold, but a thousand miles up an enquirer will find that the gold washer makes less out of a hard day's work than the agricultural labourer, and that no one washes gold who has other regular employment. The returns upon such washings, though they suffice to support a coolie in some fashion would not buy tobacco for a foreign prospector. It has been demonstrated, however, that in some Asiatic streams where the man with a pan would starve to death at gold hunting, the man with a dredge can nett himself quite a respectable fortune and gold dredging in the Orient is just in its infancy.



THE BIG DREDGER AT WORK IN FROZEN GROUND.

Some work has been done with dredges in Siam and Indo-China, with no little success, and only recently the first gold dredge in Korea was installed on the Chiksan concession and worked with returns which exceeded the estimates of the engineers and at a cost which was considerably under the cost of operation under similar conditions, in America. This first dredger in Korea started operations on January 1 of this year and although it has not been long in service it has proved the value of the Chiksan concession beyond all question and, as a means of recovering gold, dredging in this part of the world is no longer an experiment.

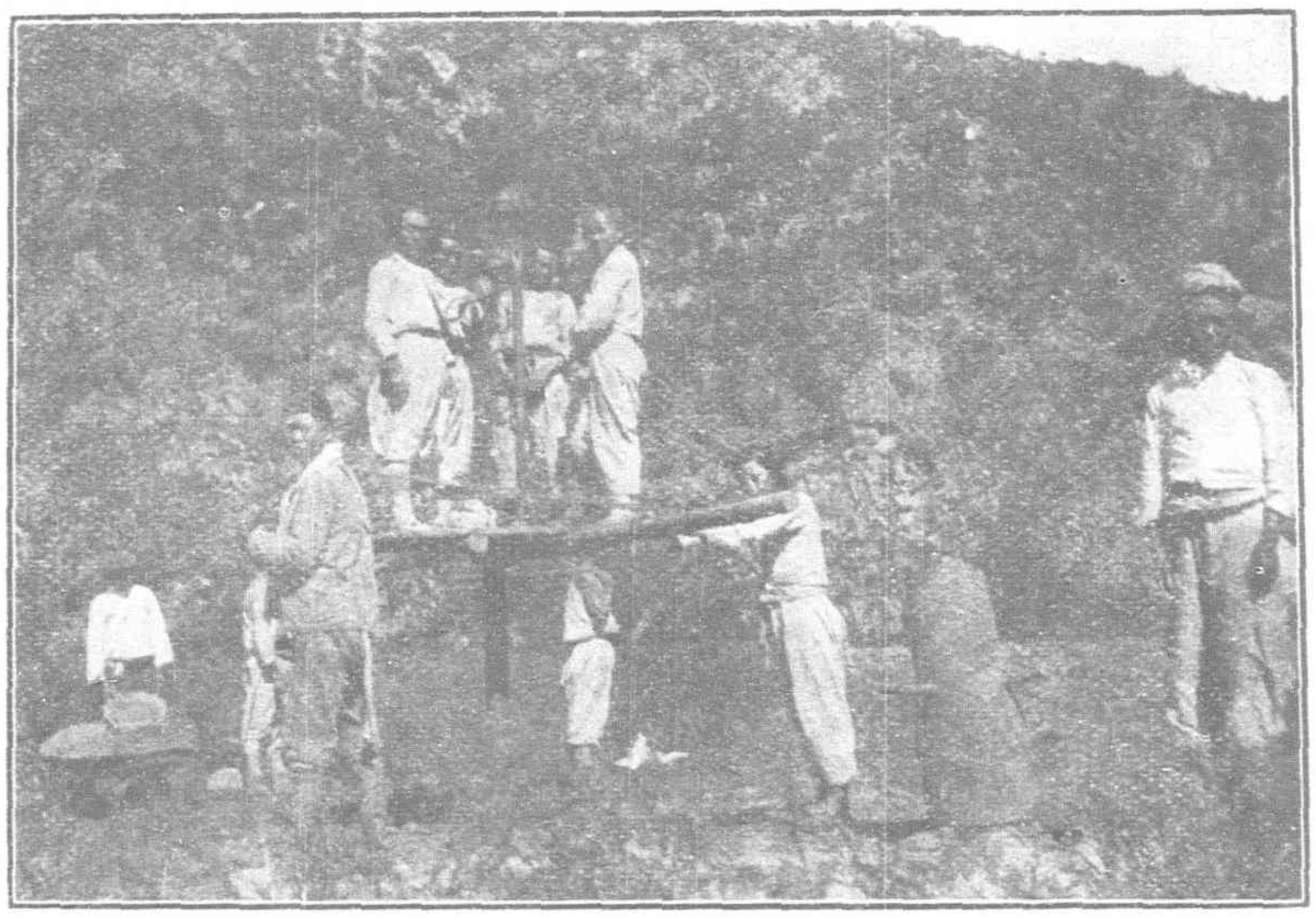
The Chiksan Mining Company

The Chiksan concession was granted to Baron E. Shibusawa and Mr. S. Asano, in August 1900, by the Korean Government and is 60 Korean *li* east and west by 40 Korean *li* north and south, covering an area of approximately 260 square miles.

The Chiksan Concession is situated about 60 miles south of Seoul (the largest city in Korea) and 15 miles west of Tsun Po bay on the Yellow Sea. The elevation of the main range of mountains reaches 2,000-ft. The majority of the veins lie in this range. The general trend of the mountains is North 60° East, the strike of the principal veins following in the same general direction.

The vein material is a medium-hard quartz containing pyrite, galena, and free gold. The country-rock is schist and granite, traversed by dykes of pegmatite. A greenstone of the pyroxene group, dark-brown where oxidized, is found widely over the Concession and in the company's mines at several places. Practically all the veins, large and small, are faulted and cut by dykes at many points, indicating extensive earth-movements.

When the concession was made it was for a period of 25 years, with the provision that the time devoted to completing all necessary explorations should be granted as an extension at the expiration of the contract period. The Japanese company explored the grant for seven years, until, in 1907, by an agreement with American capitalists, the controlling interest was sold and the company's name was changed to "The Korean Exploration Company."



NATIVE DRILL CREW EXAMINING PLACER GROUND WITH A HAND DRILL.

This new Company built two small prospect quartz mills and did considerable prospecting for quartz lodes with paying shoots therein with some success. However, if the mines were to be properly exploited and equipped--an expansion of the company seemed necessary in order to secure sufficient capital. Therefore, in 1910 a new company was formed—comprised largely of American capitalists residing in Yokohama—and the company's name was again changed to the "Chiksan Mining Company." Under this company's management, a vigorous exploration campaign was inaugurated. The company, through Messrs. Collbran and Bostwick, secured the services of their mining expert, James J. Martin—to make an examination of the valleys throughout the concession for placer gold, and, after about a year's careful work with three empire drills, he reported favorably, on the placers for at least one dredge, having proven 700 acres of ground of an average value of about 10 cents per cubic yard and while the values were somewhat low for a single dredge equipment, Mr. Martin made careful calculations--and taking into consideration some favorable dredging conditions, advised the company to equip the placers with a large size dredge, built especially to fit conditions necessary for the successful dredging and reclaiming of the ground for agricultural purposes—again.

Therefore, the company secured the services of a dredge specialist to get out a plan of dredger Mr. Martin had recommended for by—passing all top soil 100-ft. to the rear of the boat—covering all gravel and sand which, after passing over the gold tables—was washed through specially designed sluices and deposited about 30 to 40-ft. to the rear, where, as above stated, it was covered by the top 10 to 12-ft. of soil and the ground made easy for reclamation purposes.

After the plans of a dredger had been decided upon, the company asked for bids from all of the reliable dredge manufacturers in America and the contract finally went to a well-known New York Company. The following detailed description of the equipment appeared in a recent issue of the "Japan Gazette":

The Dredger

The installation consists of a 500 k.w. power station located at Seikwan, a town on the Seoul-Fusan Railway, 50 miles south of Seoul, a high-tension transmission line extending about six miles to the dredger area at Chiksan and the dredger.

The power-house consists of three Babcock and Wilcox boilers for 200-lb. pressure, automatic stokers, Green economizer, Curtis General Electric turbine and Wheeler condenser. The plant is especially designed to fit in with an additional unit when required.

Delays in the transportation of power, house machinery due to war conditions retarded the completion of the plant, so that digging was not commenced until January, 1918.

A high-tension transmission line carries the current at 22,000 volts to a point within a mile of the dredge where it is transformed to 12,000, the voltage used by all motors on the dredge.

The dredge is all steel, and has a digging capacity of 25-ft. below the water-line and will carry a bank 15-ft. above water. The yardage handled is problematical, but is expected to be in excess of 150,000 cubic yards per month.

This dredge has an over-all-length from tip to tip of 230-ft. The hull is 110-ft. long, by 50-ft. wide, by 10-ft. deep, and has an overhang of 3-ft. on each side, giving a deck width of 56-ft. The total weight is 1,300 tons.

The forward gantry is built up of 14.1-in. beams capped with a 20.1-in. beam and has a height above deck of 43-ft. The main gantry is also built of 14.1-in. beams and has a height of 31-ft., while the rear gantry is 63-ft. high and built of 12-in. H beams.

The digging ladder is 80-ft. long, of the box girder type, and carries a bucket line of 62 manganese steel buckets close connected. The capacity of each bucket is 11 cubic feet; weight 2,400-lb. These travel on manganese steel rollers, spaced 6-ft. apart. The lower tumbler, 80-in. in diameter, weighs 9 tons and is of manganese steel. The lower tumbler shaft is hollow, chrome vanadium steel 14-in. in diameter. The upper or drive tumbler is hexagonal in shape, of solid manganese steel and weighs 11 tons. Its shaft is 22-in. in diameter by 11-ft. 6-in. long, driven by double gears each 12-ft. 6-in. in diameter by 10-in. face, which are in turn driven by a double set of reduction gears forming the main drive. The entire weight of the bucket ladder, with rollers, buckets and lower tumbler, is about 150 tons.

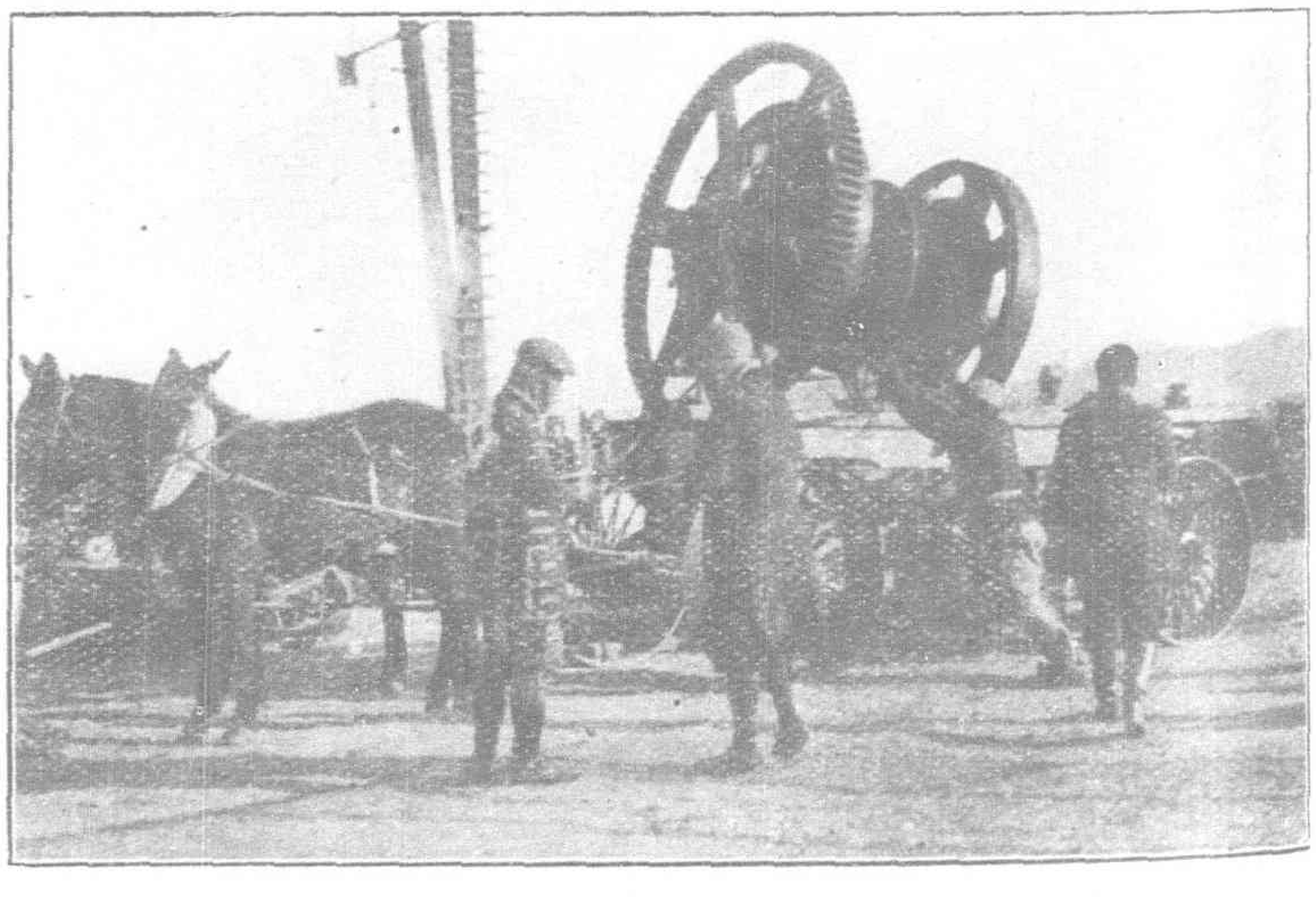
The motive-power for the bucket line is furnished by a 200 H.P. 2,200 volt A.C. motor. This is so arranged as to be used for both hoisting the bucket line and digging.

The buckets discharge through a manganese steel hopper provided with manganese steel wearing plates into a screen 84-in. in diameter by 46-ft. long driven by a 60 H.P. motor. This screen is so arranged that when rotated in one direction it forces the barren material on it without it going through the meshes, and when revolved in the other direction retarding rings hold the material in the screen until the fines are forced through by water pressure. This is designed particularly for reclamation purposes.

Material discharged from the screen is either washed to the pond some 30-ft. from the stern or led into a belt conveyor which discharges 100-ft. in the rear.

The gold bearing material washed through the screen is distributed on the gold saving tables having an area of 5,000 square feet and equipped with Hungarian type riffles.

Two spuds of the box girder type, 17-in. by 42-in. in section and weighing 17 tons each, are provided for digging, and in addition a $1\frac{3}{8}$-in. cable, 1,000-ft. long, is provided for head line when it is wished to use that method.



TRANSPORTING ONE OF THE MAIN HOISTING DRUMS.

Water is furnished by three centrifugal pumps direct connected to 2,200 volt motors. The sizes are 4,600 gallons per minute with 60-ft. head and a 125 H.P. motor, 6,000 gallons per minute with 25-ft. head, and 75 H.P. motor and 750 gallons per minute at 150-ft. head, and a 50 H.P. motor.

The main winch is mounted on the forward deck and carries 7 drums, four for the corner lines, two for spuds and one for head line. The winch is provided with double reduction gearing which provides two speeds for each drum.

A complete system of levels is provided, and all operations are controlled from the pilot house, which is mounted forward on the upper deck and provides an unobstructed view to all parts of the dredge.

A 60 H.P. boiler furnishes steam for heating purposes, and the hull is so heated as to keep the pond from freezing in the winter.

In addition to the gold content of the placer area, the existence of monazite sand has been proven. Monazite sand is one of the rare earths chiefly valuable for its Thorium contents. The Company intends carrying on experiments with a view to recovering this sand. Zirconium also occurs in the sands, and this also is to be investigated.

The dredger having been completed about the end of last year (1917) dredging operations commenced in January and at this writing, the result of three months' operations has shown that all expectations, as reported by Mr. Martin, have been more than realized.

Total cubic yards dug during the three months' operations were 559,611—or an average of 186,537 cubic yards per month. During the first two months, which were devoted to starting up new machinery and to breaking in a crew of natives to assist the foreign winch operators, full time was not attained.

The gold returns for the first three months' operations gave 13.7 cents per cubic yard, which was over 3 cents more than the reported value calculated from drill results.

The operating costs for three months were 3.3 cents per cubic yard, while the estimated, probable cost, based on American dredge operations for this size dredge, was 4.4 cents.

There are several large dredging areas, more or less prospected, owned by Japanese and foreign companies here in Chosen, waiting to see the outcome of the Chiksan dredging operations, and no doubt they will now proceed to complete their examinations and, wherever sufficient areas are proven, they will be promptly equipped. Gold dredging in the Far East can be made very profitable wherever sufficient area of reasonable values are to be found, as the demonstrations at Chiksan has proved.

Native Methods.

The methods employed by the native Korean miners before the dredging innovation were described fully in an article by Mr. W. De Witt in the "Mining and Scientific Press." The Korean has the reputation of being a national born miner and while his methods are crude he lets no difficulties or dangers stand in his way. The following excerpt from Mr. De Witt's account of Chiksan three years ago gives an excellent idea of the methods employed on other Korean claims where more modern machinery and more scientific prospecting will probably supercede native methods when the success of the Chiksan dredger is fully appreciated:—

The native prospectors follow somewhat the same system as the pocket-tracers of California and Oregon, that is, they find the spot in the vein where the best ore is found by repeated panning of the decomposed surface outcrop. When a native has discovered the vein in place, he gets his samples and brings them to the company's assay-office, where all such assaying is done free of charge; if the assays are of sufficient value he is encouraged to continue, and an order is made on the main office to issue him a license to work as a tributer on the Concession.

The prospector will then sink his shaft or drive his adit, as the case may be. Shafts have only one compartment and hoisting is by hand with a windlass. Tunnels are only 4-ft. high by 3-ft. wide. Tramming is accomplished by coolies. As little timbering as possible is done and big chances are taken with caves. However, the same native would not work in a company mine under these same conditions, as he would think it too dangerous. Despite such methods there are exceedingly few accidents, which is probably due to the fact that a Korean has no fear of personal injuries, and will venture where no white man would think of going.

I have seen cases where a miner has fallen down a winze 100-ft. deep and come out with a broken arm and a few bruises; the strange part of it is that there are more fatalities caused from falls of 15 to 25-ft. than from greater heights.

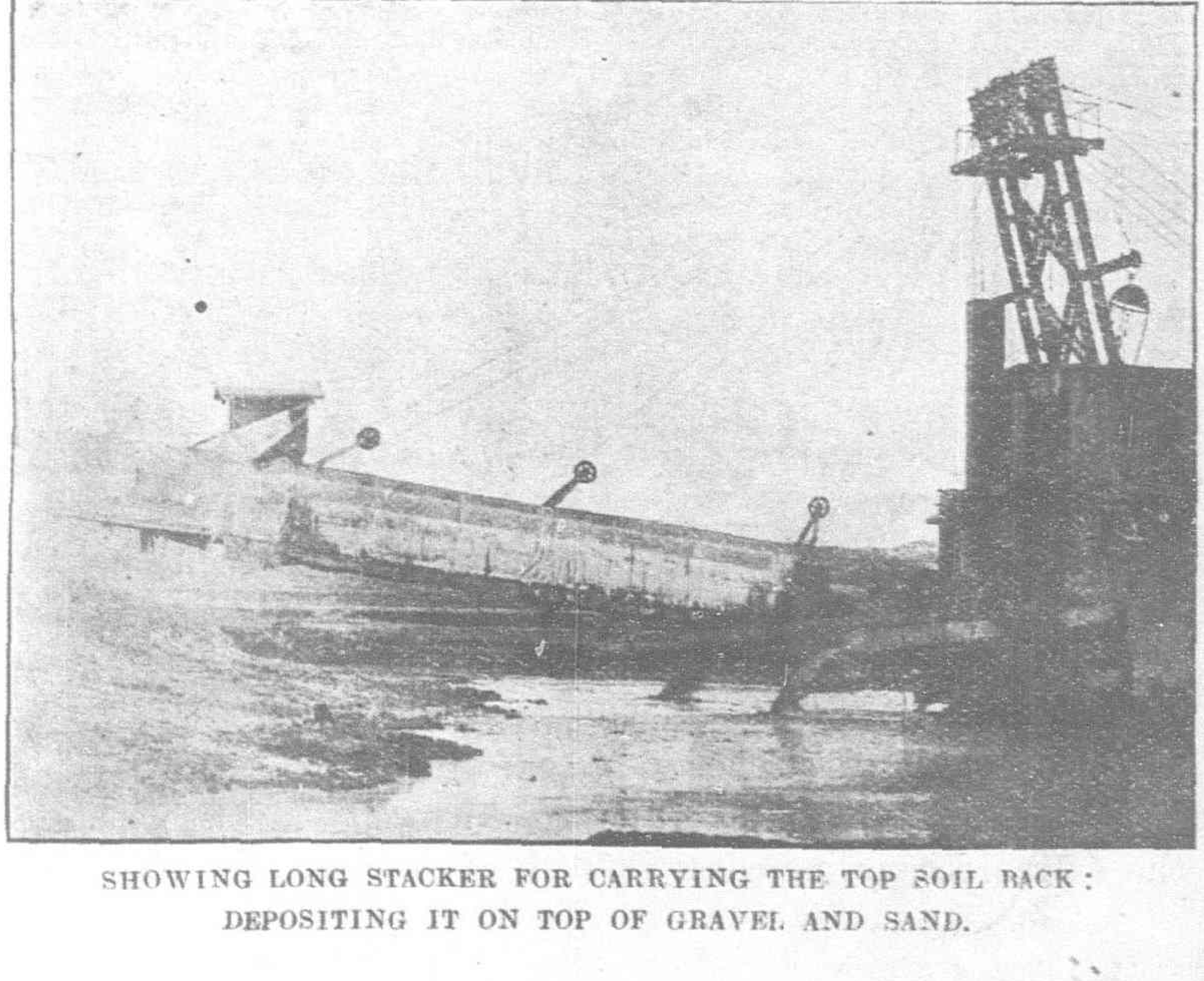
Another method of prospecting is to allow the prospector to work his mine, and pay the company a small amount per man employed. This method has its drawbacks, as one cannot watch them closely; when they pay for one man they will work a dozen; moreover, they will steal powder and drills from the other tributers, which causes trouble among them. The tributers grind the ore by hand or by the use of either the rocking-stone or the rolling-stone. In some places a long distance from the company mill, the Koreans have erected a small 10-stamp wooden mill, which has a capacity of about two tons per day, when there is plenty of water. This method of prospecting is being discontinued, as neither the prospector nor the company derives any profit therefrom.

None of these small veins has so far proved of any importance, owing to their narrowness; they vary from a few inches to 2 and 3-ft. in width; the lenses of ore are invariably short, running from 25 to 100-ft. in length, and to a depth of a few feet to 150-ft. for some of the wider veins. Inasmuch as some of these veins are quite rich, the native who finds an ore-lens soon becomes a man of importance; to show his importance he acquires several additional wives; this generally ruins his usefulness to the company, but his success is a great incentive for the others to take the field and look for other rich mines.

The license under which the tributer is working is printed on a piece of wood, 3 by 4-in., in three languages, Korean, Japanese, and English. This is necessary, as we employ inspectors who go from place to place. The tributer must keep his license with him as his protection, for, should an inspector find him working without the proof of such authorization, everything is confiscated, including the ore mined, and the tributer himself becomes liable to a fine. Japanese and Koreans are used as inspectors, but any member of the foreign staff that happens to pass by may demand to see the license. That is why one side is printed in English. It was found necessary to follow this method in order to prevent prospectors from finding rich spots and carrying off the high-grade to some native grinding-mill, without paying anything to the company.

The ore is carried from the tribute mines to the company's mill by means of bulls, both the pack and wagon being used. A bull will pack from 300 to 800-lb., while the wagons will carry from 1,000 to 2,000-lb., the driver generally carrying about 50-lb. on his own back. These men receive from 17½ to 20 cents per ton hauled per mile of distance.

Before the ore is shipped to the mill, it is reported to the officer in charge of the prospecting on the Concession; he goes, or sends a trained sampler, to take preliminary grab-samples of the ore to be shipped; if the leading to the discovery of the main mines of this company; furthermore, the prospecting has been a source of considerable revenue in the past few years, since the tribute system was established.



SHOWING LONG STACKER FOR CARRYING THE TOP SOIL BACK: DEPOSITING IT ON TOP OF GRAVEL AND SAND.

If a prospector has found a good-sized vein and the ore is not high in value, but sufficient to pay even a small margin over the milling-cost, the prospector is allowed a higher percentage, in the hope of his developing a profitable mine when he gets his workings a little deeper. This larger percentage also applies to prospects that are at a long distance from the company's mill, in order to compensate for the long haul. The tributer is also assisted in the furtherance of his work—once he has proved that he has a prospect of any value—by supplies from the company's store, where any tools, explosives, and candles will be sold to him at cost, and the amount deducted from his next shipment of ore. This is a great advantage to the natives, as otherwise they could not get explosives at all for small operations, the Japanese government officials being very strict, and all explosives must be carefully accounted for at the end of the month.

Chinese Railway Reports for 1917

Shanghai-Nanking Railway

In his report for 1917, Mr. C. P. Yin, Managing Director of the Shanghai-Nanking Railway, says: It is gratifying to note that notwithstanding the heavy cost of railway stores and shortage of rolling-stock the net revenue for 1917 has surpassed that for any of the previous years since the opening of the line to traffic. This revenue would have covered the interest charges and shown net profits even though adverse rates of exchange had been met with.

Attention may also be called to the fact that the year in view has witnessed very satisfactory results in developing the goods traffic and that through traffic was made possible with the Shanghai-Hangchow-Ningpo Railway toward the end of 1916. With a sufficient supply of rolling-stock it will not be surprising to see the volume of traffic along this line increase to a considerable extent.

The General Manager (Mr. A. C. Clear) reports as follows on the working of the Railway for the year ending December 31, 1917:— ,

Financial Results.

The following table compares the financial results of the year with those of the four previous years. For purpose of comparison with previous years the percentage of operating expenses on operating revenue is shown both with and without depreciation charges. These charges were not made prior to 1915:—

Year		1913	1914	1915	1916	1917
1. Operating Revenues ...		3,027,356	3,197,337	3,418,058	3,818,270	4,179,809
2. Do. Expenses ..		1,877,330	1,986,460	2,023,654	1,904,016	2,203,246
3. Percentage 2 on 1		62.01	62.13	54.17	46.07	49.25
		(including Depreciation charges)		59.20	49.87	52.71
4. Net Revenue		1,150,026	1,210,877	1,394,404	1,914,254	1,976,563
5. Interest on Loan	in sterling £	145,362½	154,385	154,385	154,385	154,385
	rate per £ in $	10.05	11.70	11.67	8.54	7.24
	in Mexican $	1,460,817	1,806,178	1,801,593	1,318,358	1,117,719
6. Percentage of 4 on Mortgage Bonds ...		3.94	3.36	3.88	7.35	8.95

The increase in operating revenue is good under the difficult conditions prevailing throughout the year. These are detailed under the various branches of working affected.

The greatly enhanced price of stores is responsible for the increase in operating expenses. Even so, the percentage of operating expenses on operating revenues has been maintained at a reasonable figure.

The increase in surplus profits is due to a large extent to high rates of exchange, but against this must be offset the extraordinary increases in cost of stores. To obtain a better perspective of the Railway's progress it is recommended to take the most adverse conditions of exchange in 1914, it will then be seen that a surplus would still have been recorded for the year under review. The financial results obtained for 1917 may, therefore, be considered satisfactory.

The income statement shows a surplus of $742,514.70 for the year. An increase of $246,926.87 over that of 1916.

Operating Revenues.

The following table gives a comparison of the results for three successive years:—

Year	1915 $	1916 $	1917 $
1. PASSENGER SERVICE			
(a) Passengers	2,431,040	2,634,595	2,775,204
(b) Other	75,960	104,904	148,030
2. GOODS SERVICE			
(a) Goods	841,002	968,951	1,082,314
(b) Other	38,044	42,860	95,554
3. OTHER OPERATING REVENUES	31,457	65,556	76,682
4. AUXILIARY OPERATIONS	555	1,404	2,025
Total	3,418,058	3,818,270	4,179,809

All the heads show steady development.

Passenger Traffic.

The following table shows the results for "Ordinary" traffic for three successive years:—

Class	1915		1916		1917	
	No.	Amount $	No.	Amount $	No	Amount $
1st ...	37,124	121,971	40,263	131,215	42,504	143,633
2nd ...	147,328	207,209	171,043	254,590	188,076	253,850
3rd ...	4,396,426	1,680,564	4,583,980	1,783,604	4,785,107	1,826,315
Coolie ...	834,688	325,605	910,307	376,196	1,108,894	445,109

All classes of traffic show a satisfactory rise in 1917 and a steady development from 1915.

The reduction of the coolie class fare in 1915 between Chinkiang and Nanking, to meet the launch competition, is now resulting in considerable development. This has not been attained at the expense of 3rd-class traffic, as satisfactory increases are also shown here:—

Year	3rd class		Coolie class		Total	
	No.	Amount $	No.	Amount $	No.	Amount $
1914	222,474	93,090	33,728	8,741	256,202	101,831
1915	190,694	77,030	88,507	21,070	279,201	98,100
1916	188,840	74,681	91,850	21,978	280,690	96,659
1917	202,168	80,772	155,997	37,944	358,165	118,716

The revenue from this traffic now exceeds that for 1914, with the additional advantage of attracting over 100,000 more passengers to the Railway.

THROUGH TRAFFIC.

Development continues in spite of the partial suspension of traffic for nearly two months owing to floods on the Tientsin-Pukow Railway. The greater proportion of parcels traffic still originates on the Shanghai-Nanking Railway.

The following table gives the total earnings of the six participating railways from the commencement of this traffic :—

Year	Total revenue for all Railways	Percentage of increase over previous years	Shanghai-Nankiug Railway's share	
			Amount.	Percentage of total revenues.
	$	%	$	%
1914 (9 months only)...	636,282	—	42,258	6.64
1915	1,126,541	77.05	84,562	7.51
1916	1,438,257	27.67	122,935	8.55
1917	1,629,769	13.32	137,990	8.47

Of the total traffic in 1917 about 25 per cent. originated on this Railway. Our share of the total revenue, however, is considerably below this percentage.

The Shanghai-Hangchow-Ningpo Railway was admitted to participation in through traffic commencing from the 1st January, 1917.

LOCAL THROUGH TRAFFIC.

The junction line connecting this Railway with the Shanghai-Hangchow-Ningpo Railway was opened to through passenger traffic on the 12th December, 1916, and through goods rates were quoted from the 13th April, 1917.

The following are the results for 1917 :—

		Revenue	S.N.R. share.	S.H.N.R. share.
		$	$	$
Passengers	No. 29,759	104,702	61,241	43,461
Goods	Tons 10,301	32,915	19,633	13,282
		Total	$80,874	$56,743

Considerable development may be expected in this traffic as improvements in administration are permitted to be brought about.

CARRIAGE OF SPECIE.

The following shows the results of this traffic for the past three years :—

Year		1915	1916	1917
Value of coins carried	$	121,125,357	120,615,731	115,154,083
Weight of do.	Pcls.	51,451	59,753	63,156
Freight earned	$	31,276	39,868	47,514

The increased revenue in 1917 is due to the further revision of the agreement with the specie carrier, 50 per cent. of the tariff receipts are now paid to the Railway as compared with 40 per cent. for 1915 and 45 per cent. for 1916. The final adjustment is thus reached in this agreement.

PARCELS.

This traffic continues to improve :—

	1914	1915	1916	1917
Revenue	$14,283	$20,671	$34,927	$43,163

POSTAL.

The annual fee received from the Post Office has been raised from $1,000 to $2,000 per annum. This sum is still totally inadequate to meet the actual costs to the Railway for services rendered. Further representations on this subject will continue to be made.

GOODS TRAFFIC.

Satisfactory increases are recorded in this traffic during the year.

The results give greater satisfaction when it is taken into consideration that, owing to lack of transporting facilities from the North, the decrease in revenue under "Agricultural products" for beans, ground nuts and sesamum seed amounted to approximately $110,000 as compared with 1916. On the other hand rice traffic, from Wuhu, increased our revenue by about $88,000. This is gratifying as opening up a new source of revenue for the Railway. "Animal" and "Mineral" products and "Manufactures" all show substantial increases, whilst there is a slight decrease in "Forest" products.

GOODS EARNING IN "UP" DIRECTION.

Considerable strides have been made in the development of this traffic. The earnings for the past four years being :—

1914	1915	1916	1917
$165,260	$206,972	$221,008	$314,440

OPERATING EXPENSES.

The following table compares the results for the year with those for the previous year :

	1916		1917	
	Amount	Percentage	Amount	Percentage
	$		$	
	298,326	7.81	313,612	7.50
	378,706	9.92	521,016	12.47
	479,508	12.56	550,134	13.16
	430,323	11.27	468,294	11.20
	317,152	8.31	350,190	8.38
Total	...1,904,015	49.87	2,203,246	52.71

DISCOUNT ON DEPRECIATED CURRENCY.

A revised system of premium charges to reduce the loss on subsidiary coins was introduced from the 1st January, 1917, based on a rate of 20 per cent., with a fixed rate of 12 one cent copper coins as being equal to one silver 10-cent piece. Although this had the effect of reducing the number of small coins received, the rate of premium being in excess of the normal market rate, gave scope for manipulation by the station staff. A modified arrangement was introduced on March 1st, 1917, based on 12½ per cent. on small silver and 25 per cent. on copper coins.

This has proved satisfactory as the following figures show :—

Year		1912	1913	1914	1915	1916	1917
Net Loss	$	73.749	69.680	41.176	31.541	43.327	24.558
Percentage on Revenue	%	2.76	2.30	1.29	0.92	1.13	0.59
Average market rates for small silver	%	13.54	12.52	11.94	11.10	12.33	11.64

The revenue from passenger service per passenger train-mile has dropped from $3.27 to $3.16. At the higher figure trains were overcrowded and an extension of the service became necessary. Even at the present figure trains are uncomfortably full. A revenue approximating $3.00 per passenger train-mile would compare favourably with the great majority of railways in the world.

For goods service revenue per goods train-mile a satisfactory increase from $2.48 to $2.82 is recorded.

The average revenue per ton hauled has risen from $1.08 to $1.18.

The increased cost of materials, etc., is indicated by the general increases per train and per thousand vehicle-miles. The cost of coal has risen from $18.74 to $21.50 per thousand vehicle-miles.

The average cost of repairs per locomotive has risen from $2,539 to $3,174. This is due to increased cost of stores and heavy repairs rendered necessary by the amount of work required from our engines to cope with traffic requirements.

CAPITAL EXPENDITURES.

PART I.—CONSTRUCTION ACCOUNTS.

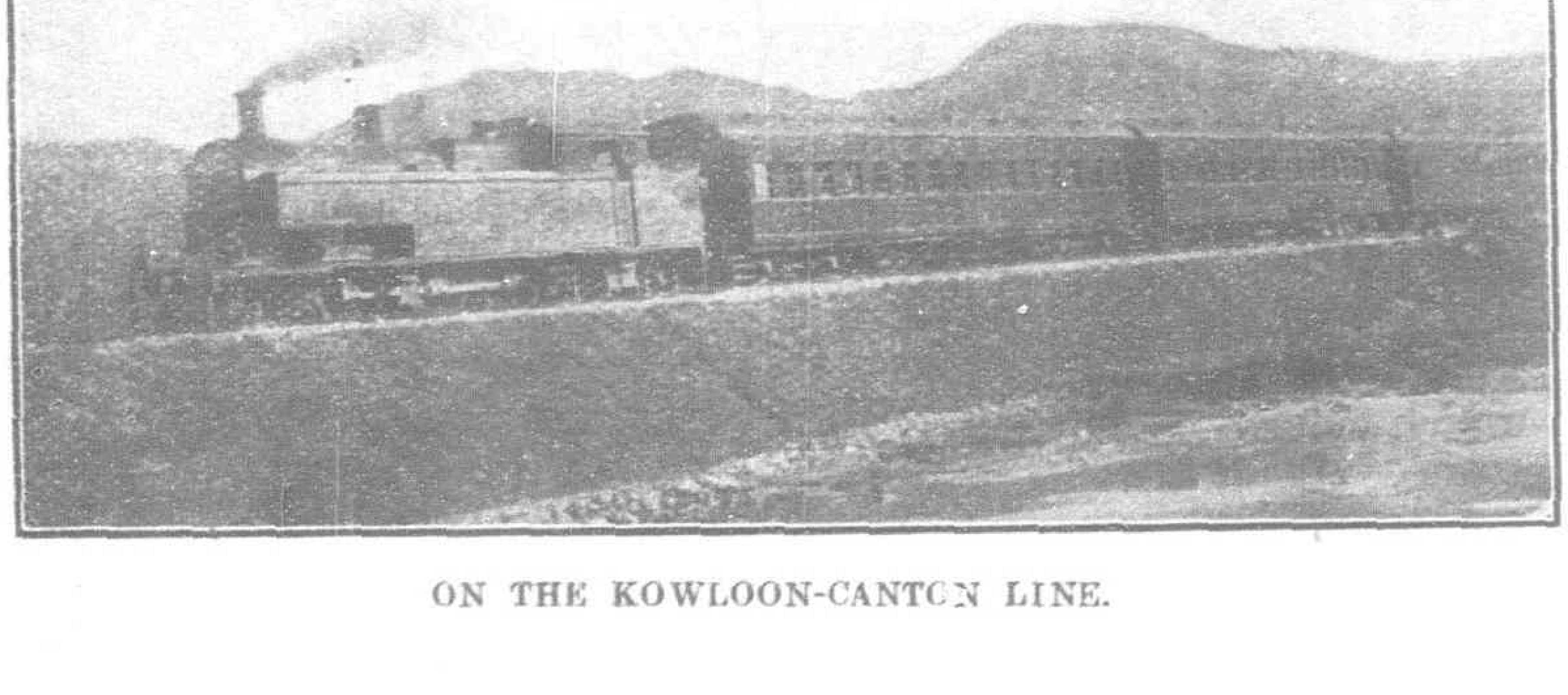
Main Head	During the year			At the end of the year
	Additions and Betterments	Property abandoned	Net Capital expenditures	
C-1 —General Expenditures				$2,403,516.03
C-2 —Preliminary Expenditures				47,061.25
C-3 —Land				2,981,035.25
C-4 —Formation	$13,922.00		$13,922.00	2,079,109.72
C-5 —Tunnels				374,642.40
C-6 —Bridgework				2,734,178.25
C-7 —Line Protection ...				64,924.01
C-8 —Telegraphs and Telephones				104,479.55
C-9 —Track	5,805.00	$11,533.28	5,728.28	7,153,095.49
C-10—Signals and Switches	15,144.81	1,009.80	14,135.01	111,913.76
C-11—Stations & Buildings	5,968.00	15,250.96	9,282.96	2,526,492.16
C-12—Central Mechanical Works	2,772.10		2,772.10	575,147.11
C-13—Special Mechanical Works				128,117.28
C-14—Plant...				347,840.30
C-15—Rolling-Stock ...	39,534.34	30,573.59	8,960.75	4,930,567.77
C-16—Maintenance ..				—
C-17—Docks, Harbours & Wharves ...	30,709.30	3,148.00	27,561.30	638,749.28
C-18—Floating Equipment				
Total Part I ...	$113,855.55	$61,515.63	$52,339.92	$27,200,869.62

PART II.—FINANCIAL ACCOUNTS.

Main Head	Additions and Betterments	Property abandoned	Net Capital expenditures	At the end of the year
C-19—Interest during Construction... ...				$3,133,610.02
C-20—Exchange				189,843.94
C-21—Land Exchange ...				12,667.59
C-22—Commission ...				622,437.17
C-23—Nanyang College ...				13,698.63
C-24—Likin Confiscation...				5,240.60
Total Part II...				$3,977,497.95
Total Parts I and II ...	$113,855.55	$61,515.63	$52,339.92	$31,178,367.57
Deduct—Recepits on Capital Account				641,610.55
Cost of Road and Equipment	113,855.55	61,515.63	52,339.92	30,536,757.02
Cost of Other Physical Property				—
Cost of Non-Physical Assets				—
Total Cost of Property carried to Balance Sheet	$113,855.55	$61,515.63	$52,339.92	$30,536,757.02

Kowloon-Canton Railway

Mr. H. P. Winslow, Manager of the British Section of the Kowloon-Canton Railway, in his report on the operation of the British Section of the line during 1917 says:—During the year the passenger portion of the Kowloon Station has been somewhat improved by alterations to the Chinese Customs examination accommodation. The outward baggage barriers have been extended which expedites the work of examination while the addition of a waiting-room for Customs officials, and the extension of the baggage barriers for the examination of inward passenger traffic afford further facilities.



ON THE KOWLOON-CANTON LINE.

Detailed surveys of possible routes for branch lines to points at Tai Kok Tsui on the western side of the peninsula and to Tai Wan Bay on the eastern side were undertaken during the year, with a view to earmarking the land necessary for such branch lines, but much still remains to be done before definite routes can be decided upon or estimates prepared, as both traverse difficult country and cross several public highways.

At the end of 1916 it was decided to close the capital account and in future to charge all expenses other than revenue to the head of Special Expenditure. The amount included in the estimates for this purpose was $159,896 and during the year at various times other sums were voted making a total of $273,069.68. Of this, however, only $101,460.48 was actually expended and the details are shown in the table of expenditure herein.

In April $97,864.89 was voted for the erection of a goods examination shed but as the building was not finished at the end of the year only $63,707.23 was expended and the amount needed to complete the building will appear in the 1918 accounts.

The special expenditure has been added in a summary to the capital account which now stands at $14,812,377.77 main line and Fanling branch $89,808.57.

The revenue statements of earnings and expenditure follow the line previously adopted. The actual expenditure amounted to $337,431.48 against an estimate of $366,405 showing a saving of $28,973.52.

The saving under the head of Personal Emoluments amounted to $15,575.92 partly due to two members of the staff serving with His Majesty's Forces, the transfer of the Inspector of Station Accounts to the Colonial Secretary's Office and other staff changes, also to a smaller extent to a higher rate of exchange prevailing than was anticipated when the estimates were framed.

The savings under the various sub-heads of other charges amounted to $13,397.60. The cost of running stores supplied to engines was $2,800 below the estimate owing to economies effected in the use of oil and other stores, and $2,800 was not required under sub-head commission on goods. The maintenance cost of telephones was $1,000 less than was estimated and traffic stores $800 and smaller amounts under other sub-heads.

In spite of the increased cost of running stores and materials the percentage of expenditure to gross receipts shows a decrease from 81.02 to 78.79.

The local passenger traffic has remained steady the receipts being $119,397.09 or $470.17 less than the previous year, while the local goods traffic has increased from $7,706.81 to $9,985.88 and the sundry receipts amounted to $4,096.52 more than in 1916 which is due to the inclusion of rents collected in respect of reclaimed land let at Hunghom and to wharfage fees.

Through and joint sectional coaching traffic receipts show a marked increase of $41,763.98. This improvement is due to a great extent to the increase in certain joint sectional fares from May 1st and also to a greater number of passengers travelling than in 1916.

The condition of the goods traffic has improved, the receipts being $33,770.69 as against $18,407.50 for the previous year.

The gross receipts for the year were $428,246.46 as against $366,215.67 for 1916, an increase of $62,030.79. The balance after paying working expenses stands at $90,814.98 or $21,290.94 more than the previous year.

The results of the past 6 years are as follow :—

	Gross Receipts.	Working Expenses.	Net Earnings.
1912	$241,649.02	$207,350.78	$34,298.24
1913	333,633.32	245,808.58	87,824.74
1914	361,608.32	274,366.39	90,241.93
1915	343,769.08	297,265.97	46,503.11
1916	366,215.67	296,691.63	69,524.04
1917	428,246.46	337,431.48	90,814.98

The through and joint sectional passengers carried were as follow :—

	1915.	1916.	1917.
Passengers booked by Stations in British Territory to Stations in China	271,382	307,310	309,394
Passengers booked by Stations in China to Stations in British Territory	326,839	344,220	352,008

CONSTRUCTION ACCOUNT—MAIN LINE.

Table of expenditure to the end of the year 1917.

	$
Survey	42,277.65
Land	2,326,740.13
(*a*) Earthwork	2,710,115.50
(*b*) Tunnels	3,819,756.18
(*c*) Roads	130,857.96
(*a*) Major	829,047.22
(*b*) Minor	359,494.39
(*c*) Culverts	71,567.78
(*a*) Boundaries..	48,232.06
(*b*) Signs	727.31
Telegraph	41,221.11
(*a*) Ballast	178,828.79
(*b*) Permanent Way...	828,243.66
(*a*) Buildings and Fixtures	658,226.34
(*b*) Station Machinery	90,053.02
(*c*) Furniture	21,392.30
(*d*) Workshops	89,899.74
(*a*) Construction	143,518.90
(*b*) Loco Tools and Plant	68,775.91
(*c*) C. and W. Tools and Plant ...	25.00
(*d*) Engineering	10.00
(*e*) Loco Rolling Stock	418,907.71
(*f*) C. and W. Rolling Stock	634,843.97
(*a*) 1. Salaries and Allowances	443,874.39
2. Quarters and Offices	113,457.39
3. Instruments	10,339.91
4. Office Expenses	35,402.16
5. Medical	23,071.90
6. Home Charges	134,978.80
7. Interest	701,705.62
8. Exchange	*306,794.96*
(*b*) Accounts	41,222.35
Total	$14,710,917.29

N.B.—Figures printed in italics are minus quantities.

Summary.

Construction Expenditure of to the 31st December, 1916 ...	$14,710,917.29
Special Expenditure during the year 1917	101,460.48
Total...	$14,812,377.77

CONSTRUCTION ACCOUNT-FANLING BRANCH.

Table of expenditure to the end of the year 1917.

	$
Land	2,389.45
(*a*) Ballast	11.05
(*b*) Permanent Way	46,651.14
(*a*) Station Buildings	3,447.08
(*e*) Locomotive	15,237.89
(*f*) Carriages	21,762.36
(*a*) 1. Salaries	309.60
Total of Fanling Branch Line Construction...	$89,808.57

Revenue Account for the year ending 31st December, 1917.

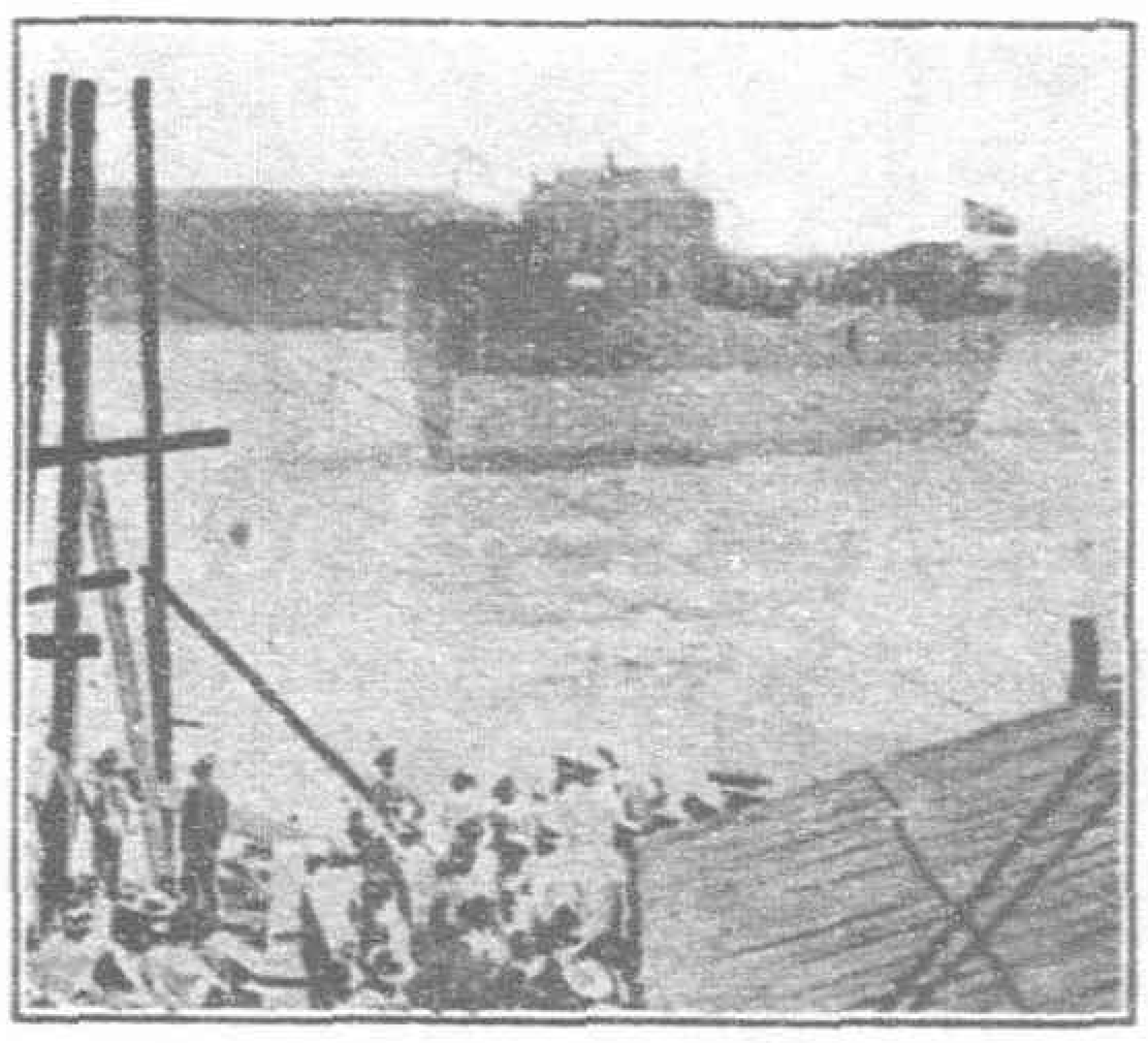
MAIN LINE

Amount 1916.	Per cent. on Gross Receipts	Expenditure	Amount 1917.	Per cent. on Gross Receipts
$	%		$	%
35,834.51	9.78	To Maintenance of Way and Works	44,553.81	10.40
155,316.76	42.41	,, Loco, Carriage and Wagon Expenses	187,971.16	43.89
52,581.25	14.36	,, Traffic Expenses	54,144.44	12.64
42,336.03	11.56	,, General Charges	39,858.76	9.31
94.00	.03	,, Miscellaneous Expenditure .	64.20	.01
		BRANCH LINE.		
2,695.28	.74	To Maintenance of Way and Works	2,809.98	.66
6,178.74	1.69	,, Loco, Carriage and Wagon Expenses	6,414.12	1.50
1,655.06	.45	,, Traffic Expenses	1,615.01	.38
...	..	,, General Charges	...	...
...	...	,, Miscellaneous Expenditure .	...	...
296,691.63	81.02		$337,431.48	78.79
69,524.04	18.98	,, Balance (Net Earnings) ..	90,814.98	21.21
$366,215.67	100.00		$428,246.46	100.00

LOCAL.

Amount 1916.	Earnings.	Amount 1917.	Total.
$		$	$
119,867.26	By Coaching Traffic	119,397.09	
7,706.81	,, Goods ,, ...	9,985.88	
14,225.34	,, Sundry ,, ...	18,321.86	
141,799.41			
	FOREIGN.		
192,858.29	By Coaching Traffic...	234,622.27	
18,407.50	,, Goods ,, ...	33,770.69	
2,175.25	,, Sundry ,, ...	2,489.25	
			270,882.21
213,441.04			
	BRANCH LINE.		
10,327.57	By Coaching Traffic	8,809.72	
647.65	,, Goods ,, ...	849.70	
...	,, Sundry ,, ...	...	
			9,659.42
10,975.22			
366,215.67			$428,246.46

Another Steamer Launched at Shanghai

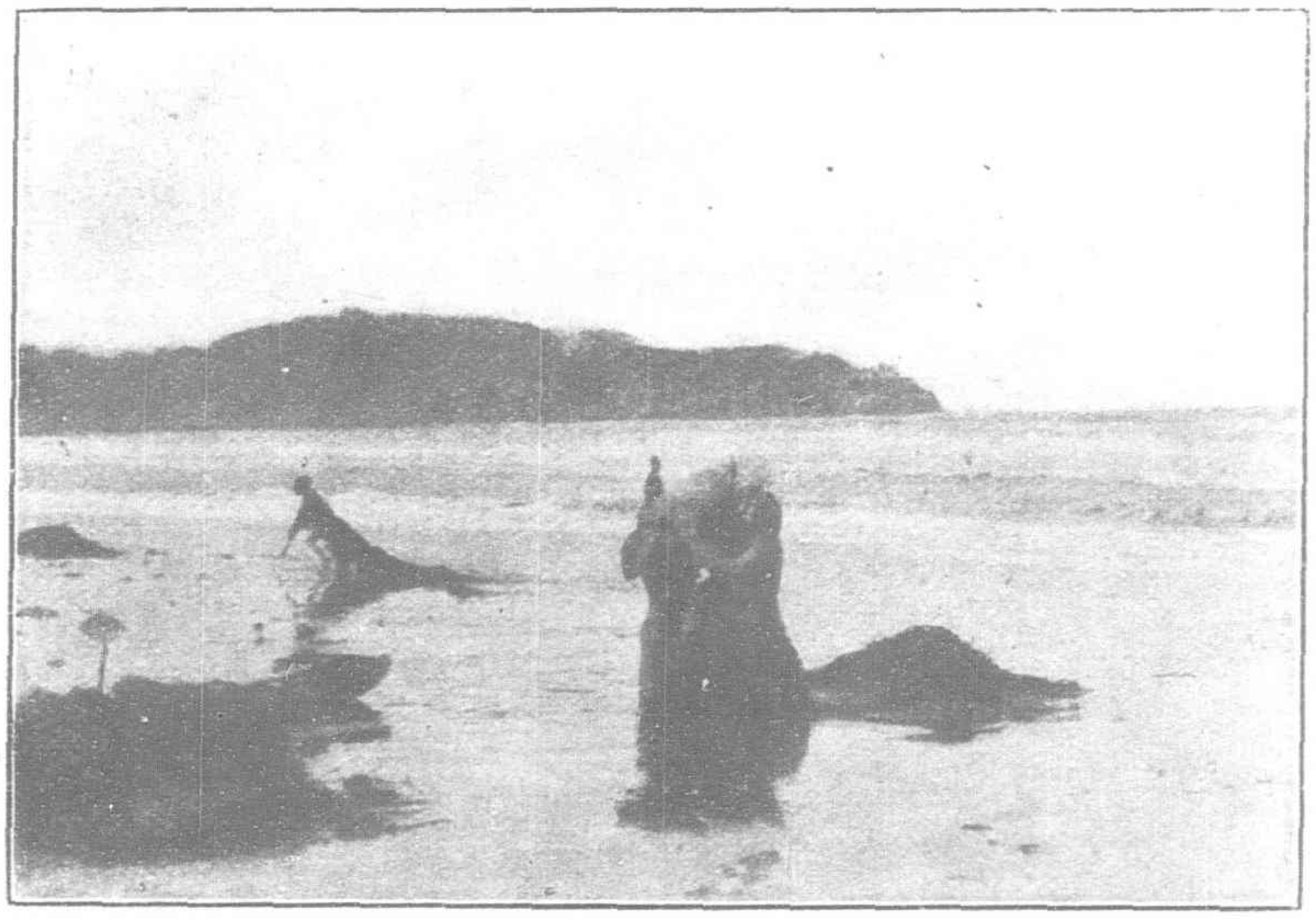


On August 9 the New Engineering and Shipbuilding Works, Ltd., of Shanghai, launched the steamer *Hero* for Messrs. Bruusgaard, Kiosterud & Co., Norway. The keel was laid in February of this year, but it was not till April that the raw materials arrived at the yards. The vessel is of the single deck type, 254-ft. 6-in. in length, overall, by 37-ft. beam and 17-ft. depth. The deadweight capacity is 2,050 tons. The engines will be triple expansion of 1,000 tons h.p., steam for which will be supplied by two cylindrical boilers. The vessel is specially adapted for handling cargo, having clear holds and four large hatches on deck. Each hatch has two derricks, with steam winches, the engines, boilers, auxiliary and deck machinery were manufactured at the works. The vessel is expected to be ready for trials in October.

The "Kelp" Industry of Japan

The Search for Potassium Chloride

When the price of a raw material advances over seven-fold in three years it commands attention even in these times of abnormal trade conditions. This has occurred in the case of potassium chloride, as shown by the reports of the Japanese Department of Agriculture. Before the war the German monopoly of this substance was practically complete, her commanding position in this respect being due not to any superiority in technical ability, as in the case of so many other chemicals, but merely to the fact that the only large natural deposits of the substance occur within her Empire.



A JAPANESE FAMILY GATHERING SEA-WEED AFTER A STORM.

Potassium, of course, is one of the most widely distributed elements, being one of the principal constituents of many of the common rocks, but in the form of a silicate in which it here occurs, it has no commercial value. Since the outbreak of the war, however, both the high price and the encouragement extended by various governments has greatly stimulated the search for the material, and its production from sources not hitherto utilized. Many patents have been taken out for its extraction from potassium bearing rocks and minerals, such as certain lavas and orthoclase feldspar.

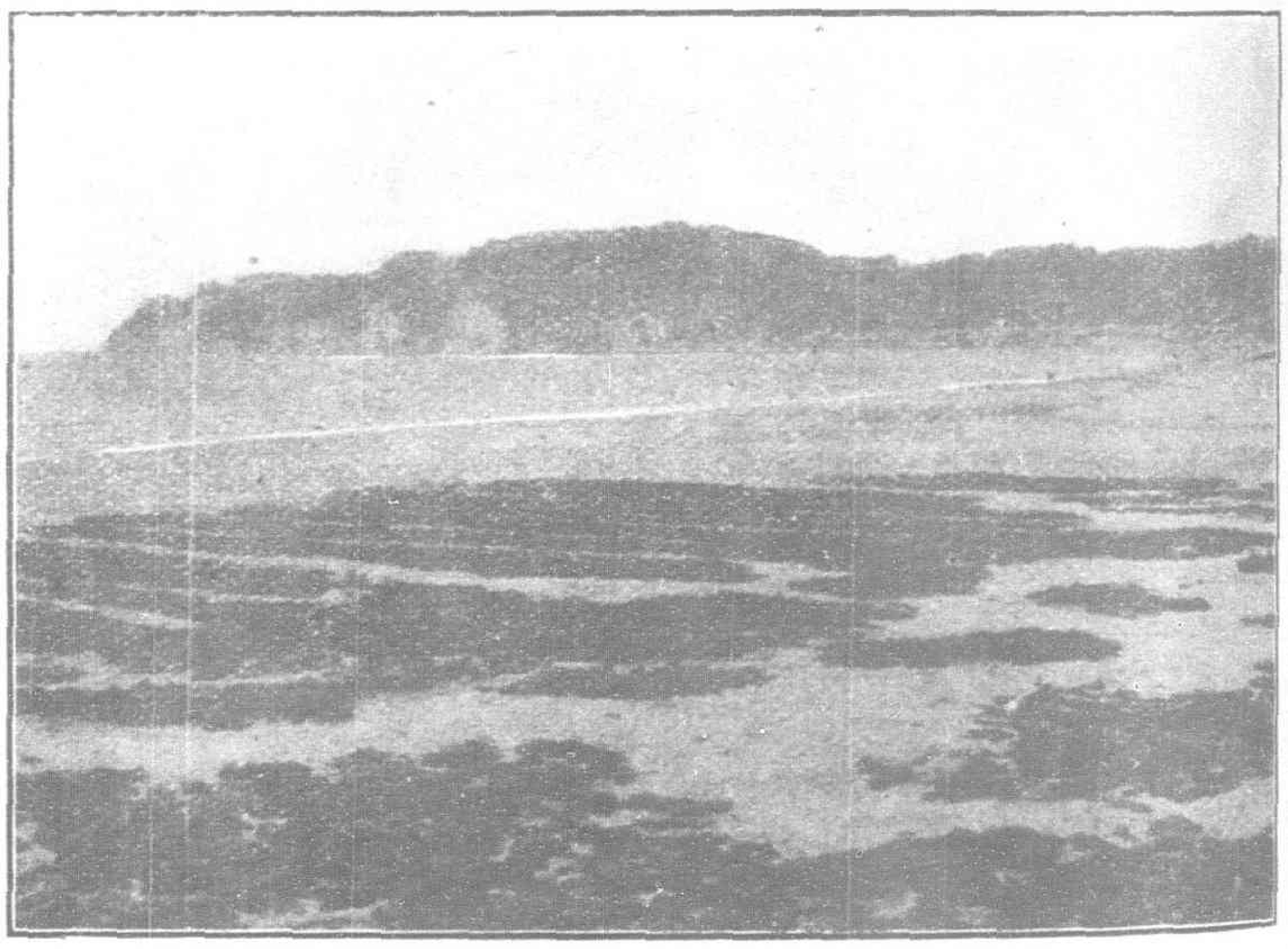
In one process it is proposed to make Portland cement from greensand (glauconite) which contains a small percentage, the heat used in sintering in this case volatilizing the potassium, which is then recovered from the flue gases. In another process white bricks are made as a by-product. Many experimental and some larger plants have been built to test and work with these and similar processes, but so far as known none of these has been commercially successful. There has been developed, however, a new source in the desert or alkali lakes, such as Searles Lake in California, the waters of which contain several percentages of potassium, obtainable with comparative ease.

In addition, the production from sea water and especially sea-weed has greatly increased. The collection of this sea-weed and its treatment has now become an important industry in France, Ireland, Scotland and, which is of especial interest in this part of the world, also in Japan.

The report of the Department of Agriculture, referred to above, shows that the weight of potassium chloride produced along the Japanese coasts increased from about four and a half million pounds in 1913 to nearly seventeen million pounds in 1916, and the value of the crude product increased from Y.107,136 to Y.2,803,860, the amount in this latter year being thus more than twenty-five times that in the former.

Besides potassium, sea-weed contains a certain amount of iodine, much smaller in percentage than the potassium content, but, on account of its higher price, contributing even more to the total value. In fact, before its sensational rise in price, the potassium was of very minor importance. Since the beginning of the war, iodine, also, has become more valuable, owing to increased demand, but as in this case there was no large supply cut off, the increase did not compare with that of the other element. The total Japanese production from sea-weed amounted in 1916 to Y.2,995,522 with an additional Y.1,634,940 was produced in the form of potassium iodide. This makes the total value of the potassium chloride, iodine and potassium iodide nearly seven and a half million yen.

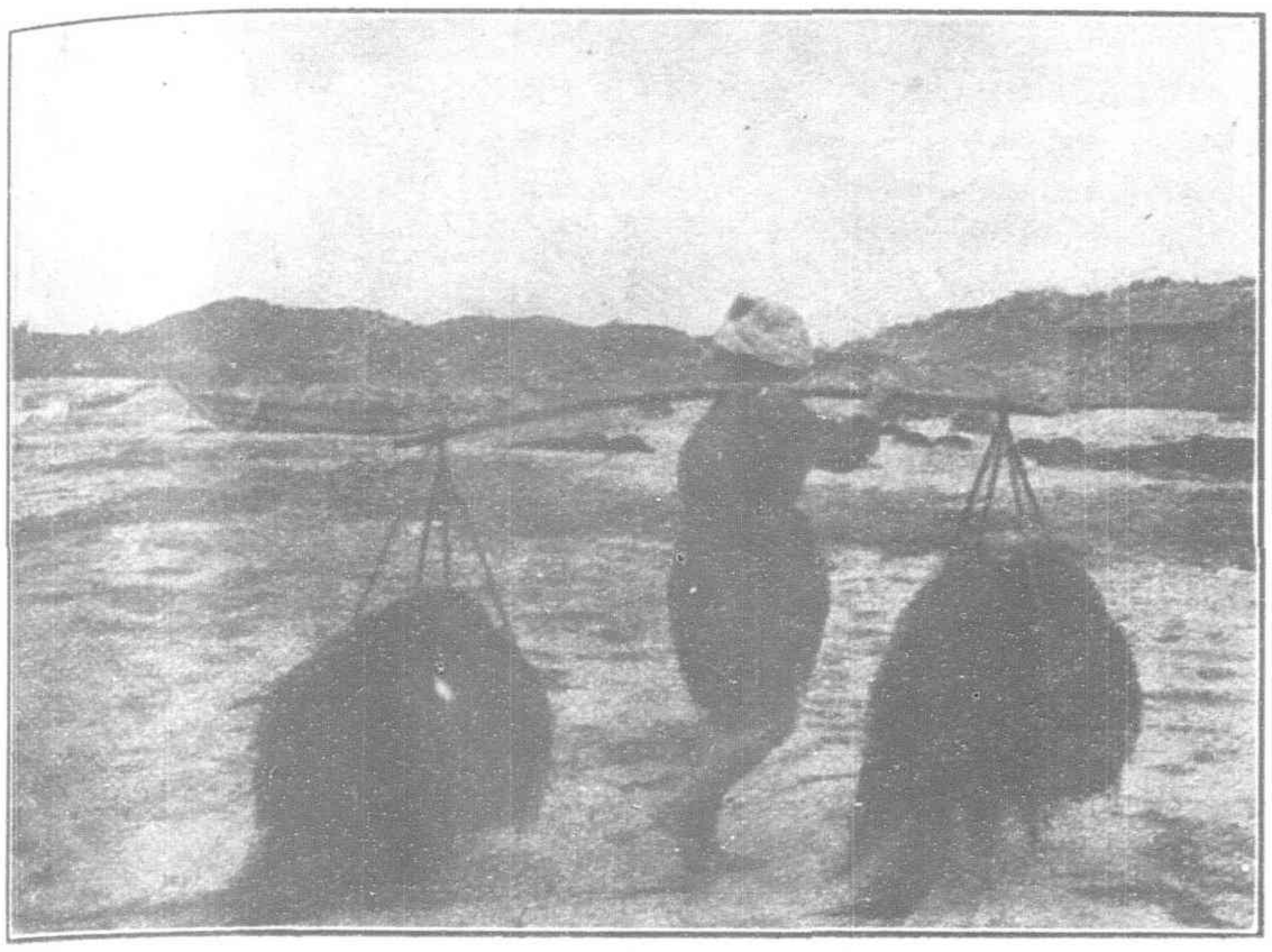
The accompanying illustrations show some typical views of this flourishing Japanese industry. Some five years ago a Japanese company obtained the exclusive privilege of cutting sea-weed in the shallow waters along the coast from Tokyo. However, this concession does not include the right to gather the large amount of sea-weed washed up on the beaches, especially during storms. This is done by the inhabitants of the sea-shore mostly in Kanagawa Ken, Chiba Ken and Hokkaido. The most common species are known in Japanese as Arame and Kajime (Ecklonia bicyclis and Ecklonia cava). Most of the work is done by the women, except after a storm when the whole family from children to grandparents lend a hand in pulling the sea-weed out of the surf. The wet material is spread on the sandy beach and there dried by sun and wind.



SEA-WEED SPREAD OUT AT KAMAKURA TO DRY.

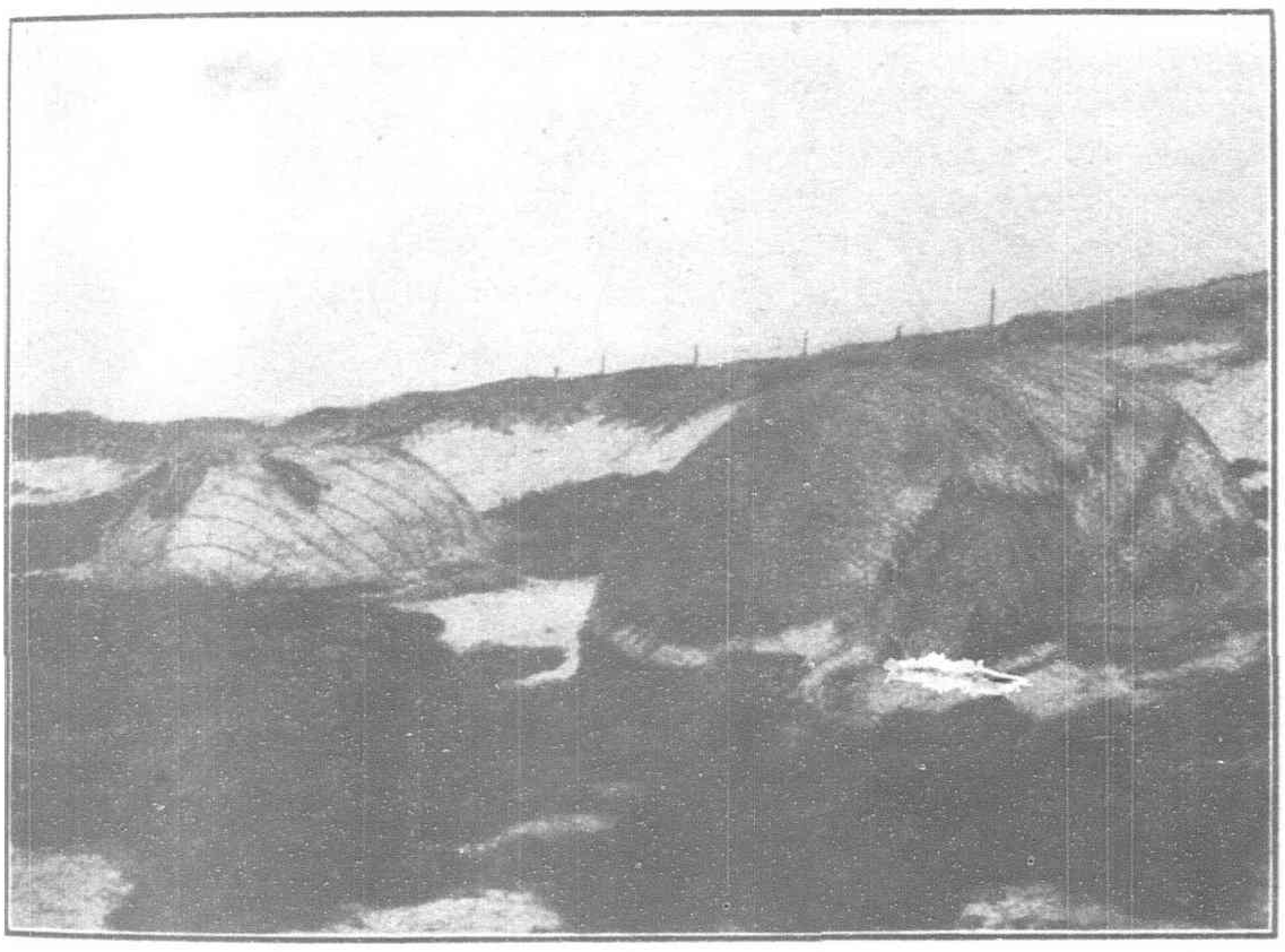
A portion of the dried material is powdered and used as fertilizer, the remainder is placed in long piles and slowly burned to ashes. In this process care must be taken that the temperature does not rise too high for if the ash is allowed to fuse, much of the iodine is lost by volatilization.

The ash is known as "kelp" or "varec" and contains, as a rule, about ten per cent. of potash (potassium oxide), though occasionally running as high as eighteen per cent. The iodine content ranges from one-fifth to two-fifths or even, in cases, as high as three-fifths of one per cent. The ash is lixiviated with



CARRYING HOME THE SEA-WEED SHE HAS GATHERED.

water which dissolves the soluble salts. The solution is then evaporated until the less soluble salts are thrown down, these are removed, and the remaining liquid placed in a still with sulphuric acid and manganese dioxide. On heating the iodine is driven off and collected. The remaining solution contains the potassium chloride and impurities, principally sodium salts, which are separated by fractional crystallization.



KELP COVERED WITH MATTING TO PROTECT IT FROM RAIN.

The following tables on the production and value of potassium chloride, potassium iodide and iodine in Japan for the last few years, are taken from the reports of the Department of Agriculture:—

Potassium Chloride.

Year	Weight	Money
1916	16,875,534-lb.	Y.2,803,860
1915	7,440,275 ,,	678,839
1914	4,286,822 ,,	116,755
1913	4,451,967 ,,	107,136
1912	2,287,139 ,,	65,030
1911	2,065,528 ,,	52,850
1910	1,505,115 ,,	49,119
1909	1,044,011 ,,	38,221

Potassium Iodide.

1916	308,640-lb.	Y.1,634,940
1915	221,334 ,,	1,407,905
1914	177,961 ,,	857,562
1913	158,234 ,,	747,301
1912	128,138 ,,	582,333
1911	136,300 ,,	476,563
1910	156,426 ,,	517,580
1909	153,457 ,,	502,984

Iodine.

1916	657,708-lb.	Y.2,995,527
1915	289,474 ,,	1,569,702
1914	239,743 ,,	1,209,207
1913	152,566 ,,	660,026
1912	145,717 ,,	567,698
1911	117,493 ,,	374,676
1910	119,190 ,,	382,324
1909	76,773 ,,	242,789

Grand Canal Restoration

Very shortly work will be begun on the survey of that section of the Grand Canal which is to be improved under the contract made some time ago between the Chinese Government and the American International Corporation. A loan of $250,000 (gold) was signed between Dr. Wellington Koo, the Chinese Minister at Washington, and the Corporation to carry out the surveys, and the work will be conducted under the Grand Canal Improvement Board, of which Mr. Hsiung Hsi-ling is the Director-General.

Mr. John R. Freeman has been appointed consulting engineer of the Corporation, with residence at New York, while Mr. Joseph Ripley has been appointed Chief Engineer to carry out operations on the Canal. Mr. Beardsley has been appointed Assistant Chief Engineer, with five assistant engineers—Messrs. Merrill, Merrick, Carey (no relation to Mr. W. F. Carey), Brodie, and Goodrich.

Mr. Ripley, who is sixty-five years of age, is an engineer of ripe experience. He graduated from the University of Michigan somewhat more than forty years ago, and soon afterwards entered the service of the United States Engineer Corps on the construction of locks and improvement of navigation of the Sault Ste. Marie, and in due course became the Principal Assistant to the late Alfred Noble, the designer of the first of their great locks.

After Mr. Noble's departure, Mr. Ripley became Superintendent of the St. Mary's Canal and navigation locks and continued in charge of these for nearly twenty years, until requested by officers of the U. S. Government to go to the Isthmus of Panama and take charge of the designing of the locks for the Isthmian Canal.

Prior to taking up his residence at Panama, Mr. Ripley was one of the members of the International Engineering Commission appointed to devise the plan of the Isthmian Canal, and his special knowledge of the practical requirements of navigation resulted in making his the leading voice in deciding many of the important features of the layout of the Canal.

After construction work was actively reorganized under Mr. John F. Stevens, Chief Engineer, Mr. Ripley in course of time became Principal Assistant to the Chief Engineer, but continued to be mainly occupied with the supervision of a corps of extremely capable men selected by himself, who were working up the details for the Isthmian Canal Locks.

Some months after the transfer of the Canal from Civil to Military control (about eight years ago) Mr. Ripley was appointed Advisory Engineer to the New York State Superintendent of Public Works, to act as his adviser, particularly on matters connected with the New York State Canals. After some time the work was reorganized and Mr. Ripley became the permanent Consulting Engineer to the State Barge Canal, which is now substantially completed.

Mr. Ripley has had many important responsibilities in working out various engineering problems of location and of design relative to carrying the water of tributary rivers, whose course the canal follows or intercepts at various points. The Barge Canal, as is well known, was undertaken to provide increased navigation facilities between Lake Erie and the Hudson River, and reaches entirely across the State of New York, having a length of 440 miles and has cost considerably more than one hundred million dollars. It is now practically ready for operation and therefore Mr. Ripley becomes free to accept another engineering engagement.

During this period of service, Mr. Ripley also has supervised surveys for other navigation improvements, the most important of which is perhaps the surveys for a canal near Birmingham, Alabama.

How Japan Finances China

Japanese Officials Publicly Outline the Various Steps Taken to Enable the Conclusion of Recent Loans with "Secrecy and Despatch"

The financial transactions recently concluded between Japanese bankers and the Chinese Government have been the source of considerable comment both in Chinese and foreign circles.

The view is held among Chinese that the loans have been made solely to provide the sinews of war for the Northern military generals to overcome the democratic South.

While the investors may resent this view, the fact remains that the loans have enabled the North to continue its clamor for "war," and have at least released sufficient other money to provide huge appropriations for military purposes which could have been much more profitably spent in other directions. The Japanese lenders claim that the money they have handed over has not been used for political purposes, but for industrial development, and in this connection the Finance Department of Japan recently issued a long statement with regard to the measures taken to make effective the investment of Japanese wealth in reproductive enterprises in China.

The policy of the Japanese Government is, according to this pronunciamento, to encourage in every way possible co-operation between the people of Japan and China, a laudable wish providing that the real interests of China are safeguarded and there is no trespass upon the legitimate opportunities for operation in China of the peoples of the powers now engaged in a bloody death-grip in Europe. Foreigners voice the fear that while their nationals are so engaged Japanese investors are busily employed laying a net-work of investments in China which may later on be developed into political bonds. The Japanese Government will no doubt be able to dispel this view when the recently announced American financial policy towards China is developed and ready to be put into operation. In the meantime it explains frankly and publicly what its policy is with regard to possibilities for investment in China which so abundantly offer at the present period.

No Chinese Parliament has yet assented to the various loans so far contracted, for the simple reason that no Parliament has been functioning, but since Japan is one of the defenders of the right of peoples to determine their own affairs it can be taken for granted that the Japanese Government will see to it that the first national parliament that comes into power in China will have placed before it for approval or otherwise all the loan agreements made since the dissolution of parliament in 1917. Once a parliament representative of a united China approves loan agreements no critic will be able to find justification for the raising of a voice in protest, it being the right of a people to do just what they deem best in the interests of the development of their country. Of course, if the various loans that are now causing so much discussion are in the meantime pooled, as is believed by many will be the case under the new American scheme, and an international loan is arranged to cover them so as to secure the broadest benefits to the country and to safeguard the interests of those having claims to participation in its development, the passage of such an embracing measure through parliament will be effected without difficulty. Until the American plan is disclosed, however, nothing definite can be said of it and it may turn out that the idea of a pool reflected above is purely speculation. In the meantime, however, the question of co-operation with Chinese interests is one which the Japanese Government intends to foster as much as possible.

According to the official explanation this constitutes an important part of a larger scheme for Japanese investments abroad, including South America and the South Seas. The preamble of the statement quotes several passages from the address delivered by Count Terauchi in the Japanese Diet in January, 1917, shortly after his Cabinet assumed control. He then declared himself in favor of any policy calculated closely to cement the friendship of the two nations. This can best be achieved, the Department of Finance points out, by economic co-operation, and with this object in view the Terauchi Government took steps to encourage various co-operative enterprises and urge upon Japanese capitalists the wisdom of investing in China, thus helping to improve trade relations, establish financial connections, and assist in the reform of currency and taxation.

These things were easy to talk about and very hard to put into practice, the Finance Department says. The first steps taken had in view the promotion of a thorough understanding as to what economic co-operation meant, the arrangement of facilities for investment, and the securing of sufficient capital. The officials then indulge in a little retrospection, and admit that in previous relations of Japan with China there was a tendency on the part of the Japanese to be over-anxious to secure advantages for themselves. For instance, the situation had frequently been complicated by attempts to "gain much and give little." Misunderstandings and suspicions had been caused by "petty immediate gains blinding the eyes to larger things." But, "thanks to the wise policy adopted by the present ministry," the officials claim that these evils have largely been eradicated—the policy, that is, of mutual development between the two nations. The attitude of Japanese investors and business promotors had undergone a marked change, which was shown, the Finance Department is glad to claim with satisfaction, by the manner in which various loan negotiations and other enterprises had been entered into since the policy had been announced.

Operations in Manchuria and Mongolia

Then the Department asks what has the Japanese Government done? And answers its own question as follows: In the first place the financial and investment facilities in Manchuria and Mongolia have been improved; (*a*) not by establishing any special bank, as, for instance, a Manchurian bank, but by improving existing institutions; (*b*) seeking to establish economic co-ordination in Manchuria; (*c*) by readjusting existing institutions to enable them better "to show their capacity"; (*d*) and by aiming at a unification of the currency system. Already a readjustment had been effected with regard to the Oriental Colonization Company, the Bank of Chosen and the Yokohama Specie Bank. How was this done?

A bill to reform the Oriental Colonization Company was passed at the 39th session of the Diet. The chief points in this measure were that (*a*) the powers of the Company were enlarged to allow it to operate not only in Korea but also in Manchuria, Mongolia and other foreign countries in colonization as well as financial operations; (*b*) the long term loan business previously conducted by the Yokohama Specie Bank was transferred to the Colonization Company, the Government deeming the former institution to be operating out of its sphere—which is that of an exchange bank; (*c*) the capital of the Company was increased from Yen 10,000,000 to Yen 20,000,000 at the end of May, 1918.

The Bank of Chosen was empowered (1) to aim at the unification of paper currency in Manchuria and Mongolia; (2) to place the distribution of capital in those territories on a proper basis; and (3) to arrange for an increase in the capital of the Bank to assist the cementing of the relations between Korea and Manchuria. To be more concrete: there are in circulation in Manchuria and Mongolia notes of the Bank of Chosen, gold and silver notes of the Yokohama Specie Bank, notes of the Bank of Japan, and Japanese auxiliary currency, silver yen, war notes, etc. This variety of money has precipitated chaos to the great detriment of trade and investment, says the Department, and to restore decent order is a difficult task. Nothing daunted the Japanese Government tackled the problem by (*a*) promulgating a law on November 28, 1917, to enable the Bank of Chosen to circulate its notes and authorize their free and unlimited employment as legal tender in public and private transactions in the Kwangtung Peninsula and the territories under the jurisdiction of the South Manchuria Railway Company; (*b*) by suspending the issue of the gold notes of the Yokohama Specie Bank as from the last day of November, 1917, and withdrawing recognition as legal tender from the Specie Bank's silver notes. All this was done with the object of unifying the currency system in Manchuria and Mongolia with gold notes issued by the Bank of Chosen.

The Gold Standard Scheme

The Department explains that the right granted to the Specie Bank to issue gold notes in the past had been a measure of expediency because no other institution was equipped to do the service. The Bank of Chosen had been selected to supersede the Specie Bank because of its geographical proximity to Manchuria, Mongolia and Russian Asia, and because such business was considered part of its original mission. The Bank had been empowered to act as a general financial organ to bring about unity of the currency system. The Japanese Government aimed at helping the establishment of a gold standard everywhere, thereby leading to a fundamental reform of China's currency. The treasuries and post offices in Manchuria have been instructed to refuse to deal with silver so long as such action will not interfere with the policy of the redemption of war notes. The South Manchuria Railway Co. has also been instructed to follow that policy. In other words transactions in Manchuria are to be made on a gold basis.

With power being granted to the Bank of Chosen to undertake the great task mentioned it became necessary to increase its capital. Consequently a bill was passed at the 40th session of the Diet to authorize the Bank to increase the note issue reserve from Yen 30,000,000 to Yen 50,000,000. The Bank was also empowered to engage in guarantee trust business.

The Yokohama Specie Bank was ordered to surrender to the Oriental Colonization Company the service of long term loan making; to the Bank of Chosen the right of issuing gold notes, etc; the Specie Bank reverting to operations under its original charter as an exchange bank. In this way, the Department of Finance claims, the readjustment of financial and investment facilities. have been successfully effected in Manchuria and Mongolia

How Loans are Being Made to China

The second point in the readjustment of Japanese financial facilities in China embraced the improvement of facilities for financing and investment in China Proper. After some deliberation as to whether one big comprehensive organ should be established in Japan to conduct investments of world wide scope, or two or more with spheres of activity limited, it was decided by the Japanese Government to resort to the latter policy. Though the former was considered theoretically correct it was considered that the money market of Japan was not yet in a condition successfully to put it into practice.

For one thing, the Finance Department points out, great difficulty would be experienced in readjusting the activities of existing institutions engaged in enterprises and investments abroad. Of the two organs decided upon one will engage in financing and investments in China, and the other will operate similarly in South America and the South Seas. To perfect operations in China Proper the Government bent its energies, successfully it is claimed, to supplying what was lacking in existing institutions.

Briefly summarized the Government worked to improve the specially privileged organizations such as the Bank of Taiwan and the Kogyo Ginko (Industrial Bank of Japan—the Chinese transliteration of the characters of the name being Hsin Ye Bank), and to extend the scope of activity of the Tao Koygo Kabushiki Kwaisha (Oriental Development Company), and to organize a foreign investment bankers' syndicate.

On the Chinese side the Exchange Bank was established with the object of facilitating Sino-Japanese joint enterprises, this Bank establishing close relations with the Bank of Communications. How these institutions had been used so far was then explained by the Finance Department as follows:—

"Secrecy and Despatch" Necessary

Because of political instability in China investment in that country was very risky. Financial transactions had to be carried on with secrecy and despatch. To meet the abnormal conditions of the times the following measures were taken to enable the specially privileged banks to carry on operations:—It was arranged (*a*) that political loans be handled by the Yokohama Specie Bank; small loans or short term loans to be dealt with as before; (*b*) that economic loans be made chiefly by the Industrial Bank of Japan, the Bank of Chosen and the Bank of Taiwan, which will co-operate in accordance with the instructions of the Japanese Government.

The Toa Kogyo Kabushiki Kwaisha was organized in 1909 as an organ of investment and for the promotion of enterprises in China. Its capital was originally Yen 1,000,000. An increase to Yen 3,000,000 was made in March, 1917. and later on it was further increased to Yen 20,000,000. The Finance Department expects much from the operations of this company.

The Bank of Taiwan increased its guarantee reserve note issue from Yen 10,000,000 to Yen 20,000,000, and the capital from Yen 20,000,000 to Yen 30,000,000.

The development with regard to the Bank of Chosen has been mentioned above.

Many improvements have been made with regard to the working of the Industrial Bank of Japan. One of the chief improvements to facilitate investment operations in China was the provision by the Japanese Government of a guarantee for the payment of principal and interest on debentures issued by the bank to the extent of Yen 100,000,000. The relation of such issues of debentures to ordinary banks is explained below.

A Banking Syndicate Created

Japanese Banking syndicates have already operated in China, the Department points out, but they have been imperfect. With the object of effecting improvements a new syndicate was organized on May 25, 1918, at the time the Government extended its guarantee to the Industrial Bank. The new syndicate is known as the Foreign Investment Bankers' Syndicate, and it will assist the Industrial Bank in its issue of debentures, and will otherwise co-operate with that bank in effecting investments abroad. In this syndicate were included eighteen of the principal banks of Tokyo and Osaka. As the Industrial Bank of Japan is expected to obtain the sanction of the Minister of Finance before prosecuting any enterprise, the relation of the Government with these various banks has been made very much closer than it was before, so that it will be easier to put into effect the Government system of investments abroad.

In referring to the Exchange Bank of China the Department of Finance seized the opportunity to extoll the virtues of the Terauchi Ministry. The Department laid it down that the policy of the Ministry is to respect the will of the Chinese, whereas that of the former Ministry disregarded the wishes of the Chinese, etc. In addition, the Department avers, the desire for financial co-operation was first suggested by the Chinese The Exchange Bank was formed in January of this year and began business in February. It was incorporated not under the laws of Japan but under those of China, and its main office is in Peking, with a branch office in Tokyo. The President and Manager are Chinese while the Managing Director and Assistant Manager are Japanese. The Bank has so far negotiated the Telegraph Loan of Yen 20,000,000, and much is expected of it in the future.

The Bank of Communications of China is a powerful institution, the Department of Finance reminds us, but owing to political disturbances it has suffered considerably: to such an extent in fact that its notes could not command the respect of the public. To help that bank was considered beneficial both to China and Japan. The specially privileged banks of Japan were, therefore, instructed to assist it and they made a loan of Yen 25,000,000. A Japanese adviser was employed by the Bank, and the Department expects that the institution will now be able to do much to improve the economic relationship between the two nations.

Whereas the Toa Kogyo Kabushiki Kwaisha is a concern organized under the laws of Japan, the Sino-Japanese Development Company is a concern organized under the laws of China. In the latter Japanese and Chinese co-operate, which fact will, the Finance Department says, make for convenience in the promotion of joint enterprises, and should, therefore, be freely made use of.

In carrying out the idea of Sino-Japanese economic co-operation the Finance Department points out that the desirability of effecting financial co-operation between Japan and America was kept in mind. Thus (1) in the Grand Canal loan joint investment by Japan and America was effected, and (2) in other loan undertakings in China a reasonable degree of co-operative understanding had been arrived at between the Industrial Bank of Japan and American capitalists. (3) The Tao Kogyo Kabushiki Kwaisha is endeavoring to establish an understanding between Japanese and American capitalists, and (4) the special finance commission sent to America by the Japanese Government had opened a way for Japanese-American economic co-operation.

In addition to the foregoing, the Department says, the Powers had been consulted with regard to bringing America back into the International Consortium. But this endeavor has not yet been brought to a consummation.

Economic and Political Loans

The Finance Department further reviewed the history of loan making by Japan in China in recent years, especially since the formation of the Terauchi Ministry in the fall of 1916. Up to that time the loans made by Japan totalled only about Yen 120,000,000. In accordance with the policy outlined above and in spite of unstable political conditions in China and the relations (not explained) with other powers and other circumstances loans to the total of Yen 122,700,000 had been made during the administration of the present Ministry, which the Finance Department considers is a glad sign of improvement, indeed.

This amount was divided as follows:—

Loans to the Central Government ...	... Yen* 79,660,000
Loans to Provincial Government ...	... Yen 11,250,000
Loans to private companies and persons ...	Yen 31,841,500
Total... ...	... Yen 122,751,500

These loans were again divided into two classes, economic loans and political loans. The official statement reiterated what has already been published concerning the Bank of Communication loan, the Kirin-Changchun railway loan, the Grand Canal loan, the Shihpingkai-Chengchiatun railway loan, the Chihli Flood loan, the Telegraph loan, the Kirin-Hwaining railway loan, and other loans, giving only the bare facts and the amounts involved. These were classed as economic loans.

The political loans, according to the official statement, referred to the first and second advance of Yen 10,000,000 each on account of the second reorganization loan, and the currency reform loan. The statement reviewed how the Chinese Government opened negotiations with the International Consortium for the first advance of Yen 10,000,000 in September, 1916, how the German group was excluded and what was done towards bringing the American group back to the fold, how in the meantime the Chinese Government was pressed for money, how it was deemed necessary to go to its assistance and how the negotiations for the proposed loan were consummated. This advance of Yen 10,000,000 for a short term was made by the specially privileged banking group on August 23, 1917. Then the second advance of Yen 10,000,000 was negotiated with the view of restoring the normal value of the Bank of China notes and the stability of the Bank, so as to pave the way for currency reform. An application was first made for £2,000,000 in October, 1917, to the International Consortium. After repeated negotiations the amount was fixed at Yen 10,000,000, and the advance was made by the specially privileged banks of Japan in January, 1918.

Reference was also made in the statement to the currency reform loan propounded by Mr. Liang Chih-chiao, former Minister of Finance, on July 26, 1917, for £10,000,000. Because by the postponement of the payment of the Boxer indemnity the Chinese Government was financially relieved considerably with regard to its administrative expenses that Government proposed to stop borrowing with regard to the second reorganization loan and to substitute a loan for currency reform. China even explained her plan for currency reform, but the proposal had not yet been consummated.

The official statement further reviewed the circumstances connected with the postponement of the Boxer indemnity; the revision of the Customs tariff, to which the Powers agreed on principle and in regard to which the conference was then being held in Shanghai; the improvement of relations with the Hanyehping Company, by which the long pending question of increasing the supply of ore and pig-iron to Japanese foundries was solved, and the rate of interest made by the Specie Bank was permitted to be lowered and otherwise the convenience of the Company secured with a view to stabilizing its affairs.

Currency Reform

The question of currency reform had been studied for years past, but at the time the Finance Department's statement was written the question had not been settled though it was stated that an understanding had been reached to permit the flotation of the currency reform loan when the market in Japan was favorable. An understanding had then also been fairly well reached as to the appointment of a Japanese adviser on currency reform.

The Finance Department considered it a noteworthy fact that Japan had come to initiate such a movement, and trusted that as the problem was being studied by experts on the subject a solution would be reached before long.

The statement also referred to the appointment of a financial agent of the Japanese Government stationed in Peking, to be followed by other agents stationed in other countries.

Sino-Japanese Trade

In referring to the trade conditions between the two countries the Department stated that because of a shortage of silver since the outbreak of war China had suffered much, with the result that transactions in business could not be carried out smoothly. Political vicissitudes and natural calamities had also seriously hindered the economic development of the country, though the rise in the price of silver had increased the purchasing power of the Chinese people.

Altogether the feeling of the Chinese people towards the Japanese had been improved so that Sino-Japanese trade had increased enormously. Whereas in 1916 the amount of exports to China was only Yen 230,000,000 in 1917, it rose to Yen 384,000,000, the imports from China increasing in the same interval from Yen 143,000,000 to Yen 186,000,000. In other words exports increased by about 67 per cent. and imports by about 30 per cent. The returns for the first four months of this year show the exports to be Yen 139,000,000, an increase of about 30 per cent. over the corresponding period of last year, and the imports to be Yen 47,000,000, an increase of about 110 per cent. over the corresponding period of last year. The officials admit that these increases may be due to the rise of prices, but claim that the quantity of goods also increased. The statement further analysed the nature of the goods involved. In exports, cotton manufactures occupied 50 per cent., and in imports raw cotton, iron and beans were the principal articles. This development it was pointed out is in accordance with the object of Sino-Japanese economic co-operation.

In concluding, the official statement apologised for taking up so much space in giving "a brief outline" of the policy of the Terauchi Ministry, and mentioned that a Military agreement had been arrived at between the two nations for the preservation of the peace of the Far East at this momentous period of world war. Thereby no stone had been left unturned to co-operate with the Allies in the war. At such a time, the officials finally urge, the people of the two nations should address themselves seriously to realizing the ideal of closer economic co-operation.

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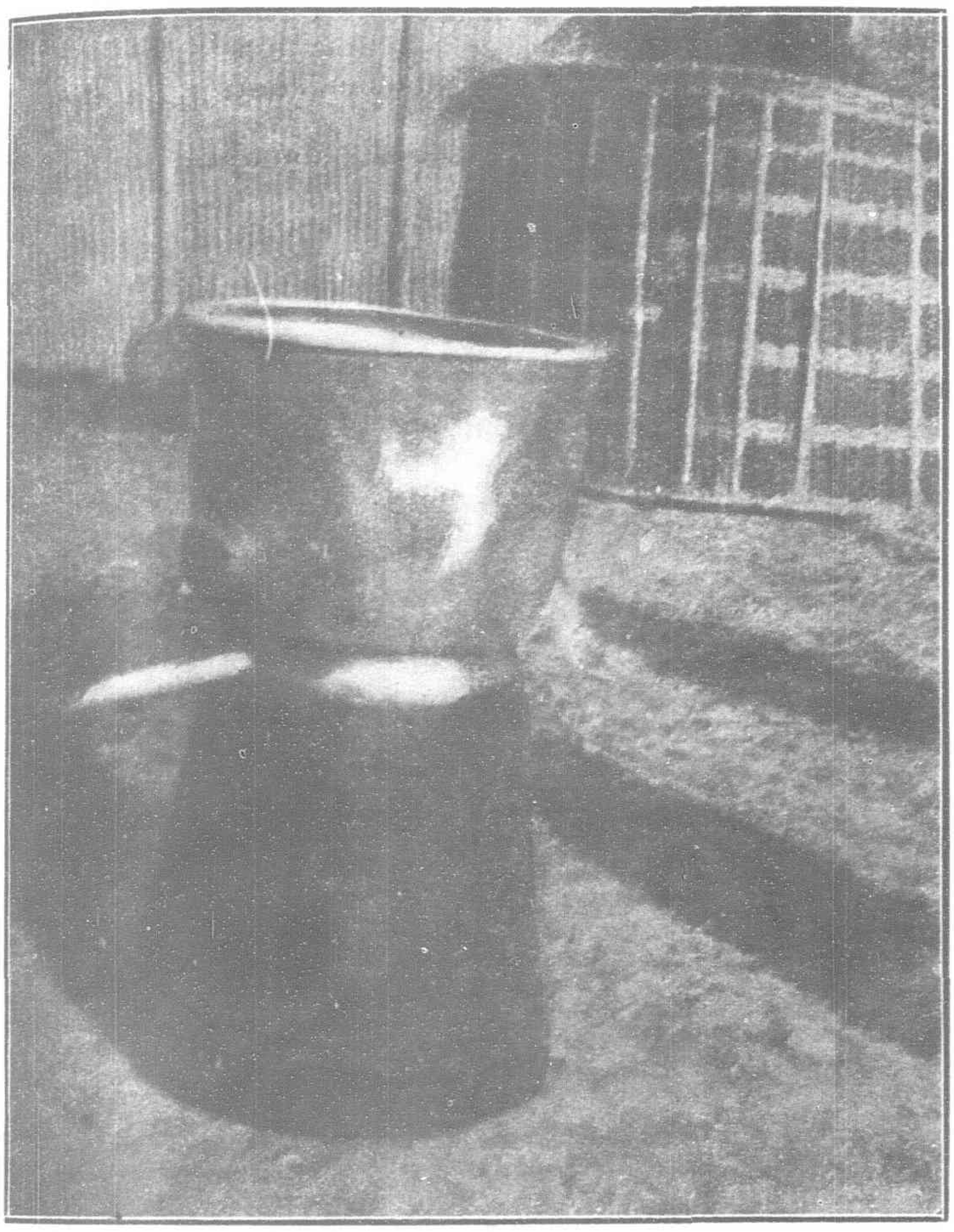
* (Translator's note—Chinese dollar was reckoned as equal to Yen 1.50. Tael Yen 2, and £ sterling as Yen 10).

Chinese Wines a Misnomer

The Manufacture and Use of Spirits by the Chinese

By Y. P. Sun, B.Sc.



NATIVE STILL SHOWING OVERFLOW PIPE FROM THE CONDENSER.

The use of the term "Chinese wines" to designate the various kinds of "tseu," or liquors, prevalent in China is unfortunate and misleading. These liquors are radically different, in the raw materials used, in the process of manufacture, and in the percentage of alcohol they contain, from what Western people call wines. It is true, the foreigner soon learns that "tseu" is not made from fruit juice and that the process of manufacture is unlike wine making; but there seems to be a pretty general misconception as to its alcoholic content. The foreigner is told that the wine used in North China is very strong but that the wine most commonly used in this section of the country is very weak. Probably the foreigner reasons that the "strong wine" is about like port, with 16 per cent. of alcohol, and that the "very weak" wine is, therefore, about like Western beer, containing about 3 or 4 per cent. of alcohol. At any rate, the newcomer is told by other foreigners that the wine commonly used is so weak that the alcohol it contains is a negligible quantity. It requires only casual observation, however, to make one question this information. And a chemical analysis shows that the so-called weak wine has about the same alcoholic content as champagne (10 per cent.) and that the strong wine from North China, which is also used extensively in the South by the upper classes, has three times the alcoholic content of port, or more than 45 per cent. These facts put a very different face on the question of the use of the native wines.

The word "wine," in the generally accepted sense, means the fermented product of grape juice; in its broadest sense it includes all alcoholic beverages obtained from various fruit or plant juices. Wines are manufactured by pressing out the juice of the fruits or plants and allowing it to undergo spontaneous fermentation. When these juices are exposed to the air they soon begin to ferment. This spontaneous fermentation is set up by ferments which are present on the skins of the fruits or plants, and procedes without special attention until the sugar contained in the juice is converted into alcohol and carbon dioxide.

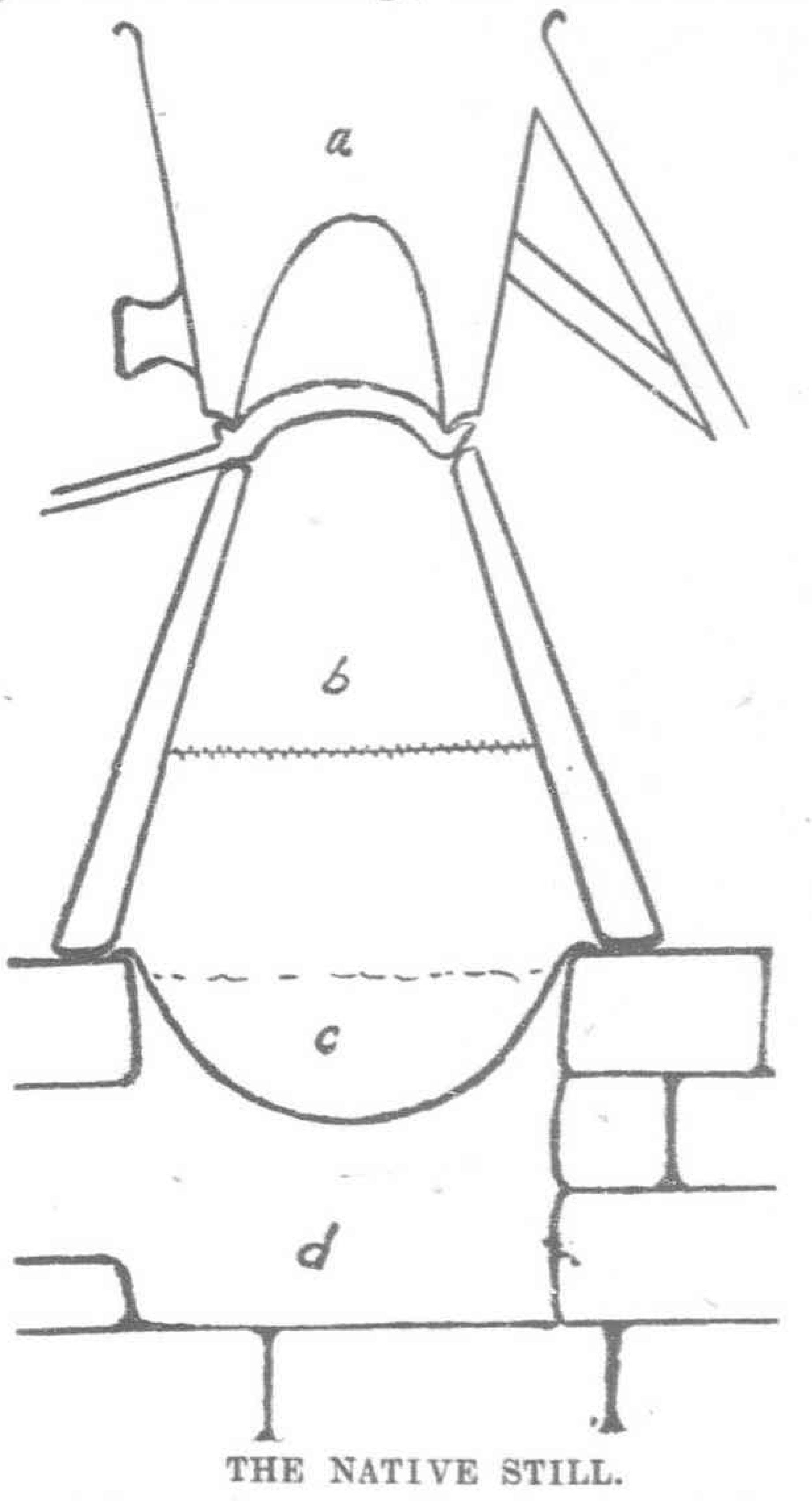
The manufacture of Chinese wines involves an alcoholic fermentation; but it also requires a preliminary process of germination before alcoholic fermentation is possible. The materials used contain large quantities of starch which must first be converted into sugars by a ferment known as diastase.

After this diastatic fermentation is complete yeast is added to set up a new process of fermentation which, as in the making of wine, breaks up the fermentable sugars into alcohol and carbon dioxide. Thus it is evident that the manufacture of Chinese wines involves two distinct fermentations; while wine making involves only one. The materials employed in making Chinese wines are principally rice, wheat, barley and other starchy substances, while the materials used in wine making are various fruits and especially grapes.

The art of making liquors has been known in China from remote antiquity. The name of I-tih, who lived more than 2000 B.C., has been handed down as the inventor of the deleterious drinks. It is recorded that he was banished for his discovery. This industry, however, has not developed and is as yet only a home industry. In the earlier days wine was used chiefly for sacrifices. But such has been the growth of the human taste for it that it is now considered indispensible on many occasions.

Chinese wines may be classified under three main heads, namely:—yellow wine, white wine, and burning wine. The first two are fermented liquors; the third is a distilled liquor. The first two are produced in Kiangsu and Chekiang; the third comes from North China. Each of these main groups may be further classified into many special types, according to its appearance, flavor, strength in alcohol, or the places where it is manufactured. The most important of these special types are "Shao-Shin," a type of yellow wine, and "Kao-liang," a type of burning wine. The white wine is used for sacrifices and is drunk by the common people but has not attained widespread use throughout the country.

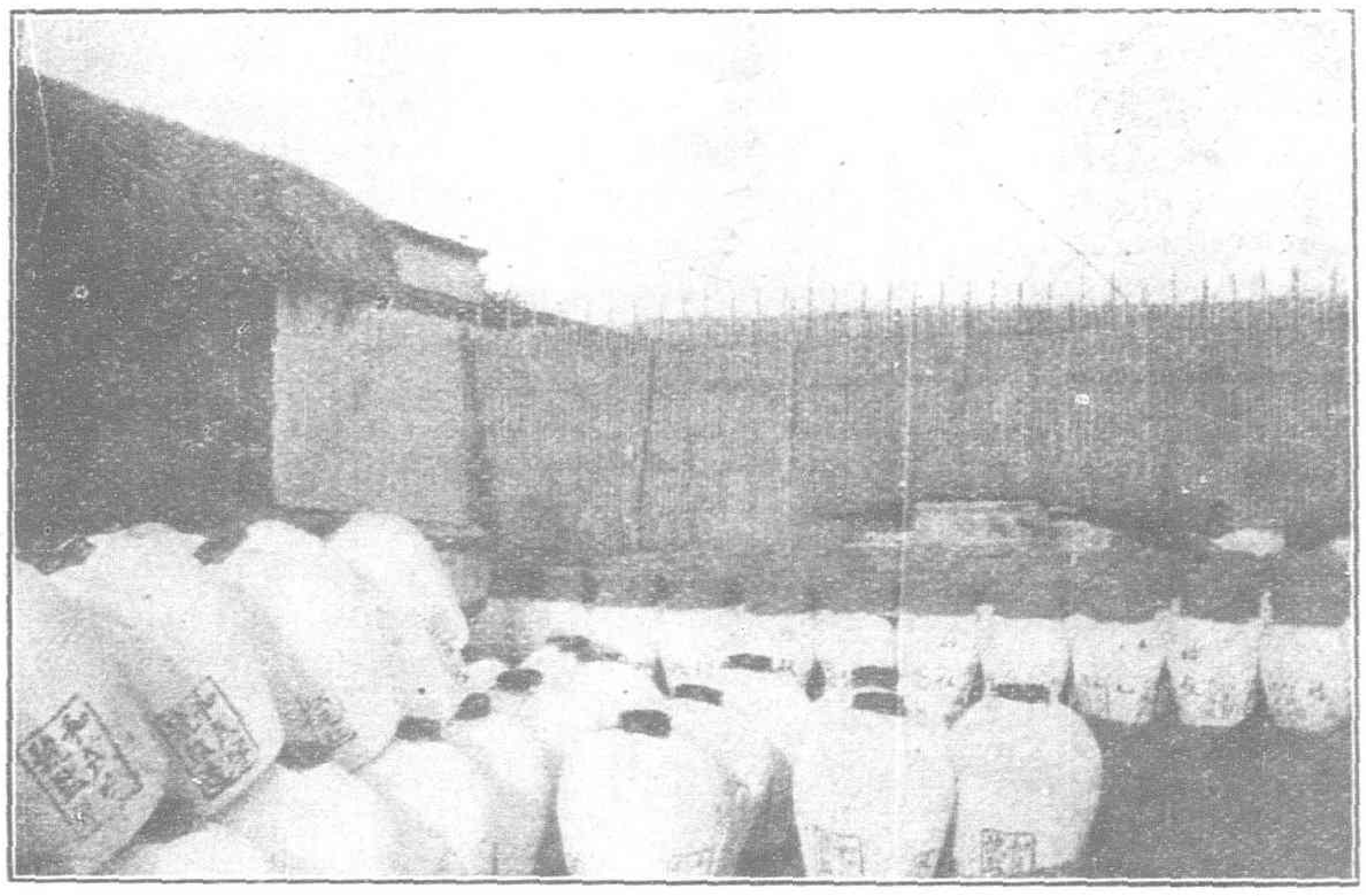
The raw materials for the manufacture of white wines and yellow wines are rice, water, and several kinds of ferments. The rice, called "Noo-Mi," is different from the rice ordinarily used for food in that it has a greater specific gravity and contains less proteids. The presence of large amounts of proteids in wines causes them to sour more quickly. The quality of the water is also an important factor in



THE NATIVE STILL.
(*a*) condenser; (*b*) charge of fermented rice or residue of the wine press; (*c*) water boiler; (*d*) furnace.

making these wines. The water should be clear, free from odor or taste, and moderately hard. The presence of calcium sulphate and sodium choloride in the water is desirable. The fame of the "Shao-Shin" wine rests upon the fact that the water from a nearby lake, is specially suited for wine making.

Three kinds of ferments are used, known as "medicine of wine," "fermented rice," and "fermented wheat." There are two kinds of "medicine of wine," white and black. The white is prepared from a mixture of a wild plant and rice flour. The black variety contains these same materials mixed with orange skin, pepper, "sweet grass" and a medicinal plant. The "fermented rice" is made by fermenting rice with medicine of wine. The third ferment, "fermented wheat," technically called malt, is made from wheat alone or from a mixture of two parts of barley and eight parts of wheat. This ferment is usually prepared at the factory by a method very similar to the foreign method of preparing malt.



STOREHOUSE, SHOWING SEALED AND EMPTY JARS.

The process of wine making is not very elaborate and varies in different factories, as each factory keeps its method a secret. The accompanying diagram represents the general process in the manufacture of "Shao-Shin" wine. The process may be divided into three stages: malting, fermenting, and bottling.

Malting consists in cleaning, softening and sprouting the grain. The rice is thoroughly cleaned by removing the chaff, dust, dirt, and dead or broken kernels. It is very necessary to remove the chaff, since it contains much fat and albumen, which give rise to too much glycerine in the wine and causes it to sour. A Japanese authority gives the following comparative composition of chaff and well cleaned rice:—

Rice: water, 14.30; albumen, 8.50; fat, 3.20; carbohydrates, 72.10; cellulose, 1.00; ash, .90.

Chaff: water, 12,30; albumen, 12.10; fat, 13.82; carbohydrates, 14.67; cellulose, 20.85; ash, 26.15.

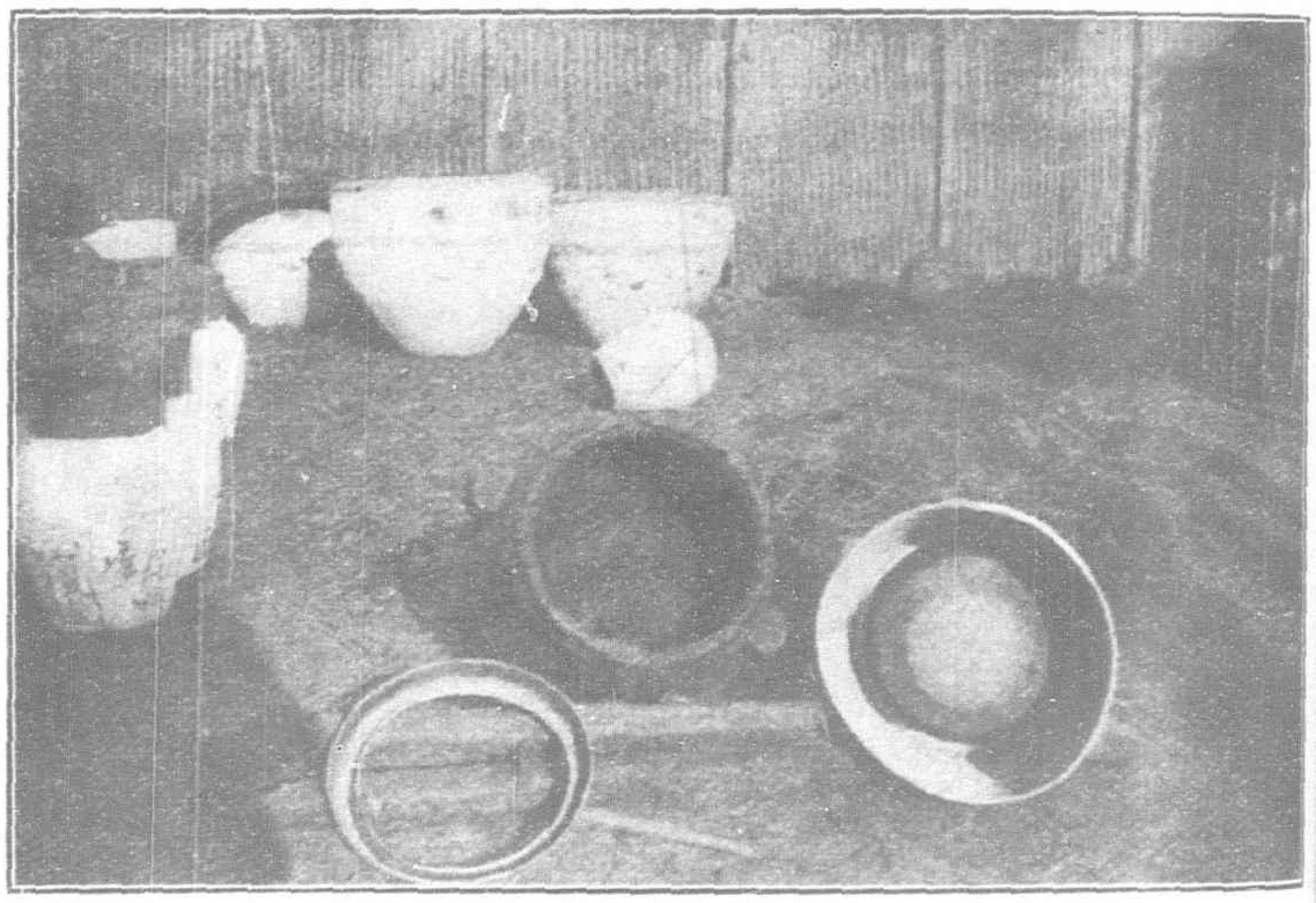
After the grain is thoroughly cleaned it is soaked in water from 36 hours to 3 weeks depending on the materials used. It is stirred frequently, and the dead kernels which float on the surface are removed. The water dissolves much soluble matter from the rice and is changed from time to time; the last washings are preserved for use in the fermentation. When a test of a few kernels shows that they are so soft that the skins may be easily removed, the grain is transferred to wooden tanks, each having a hole in the bottom, which is covered with palm thread. These tanks are placed over iron pans filled with water. The pans are heated and the steam passes through the palm thread into the rice. This process is continued till the rice is thoroughly cooked and is a pasty mass. This pasty mass is then poured into jars and covered. This ends the malting. Fermentation is set up by adding to the rice in the jars "fermented wheat" and "fermented rice" together with the washings and some clean water. The proportions of these materials vary in different localities. A typical mixture is as follows:—

Rice, catties 180; fermented wheat, 40; fermented rice, 70; washings, 1,100; clean water, 140.

These materials are mixed by stirring. Two kinds of fermentation take place, namely, diastatic and alcoholic. The former converts the starch in the rice into a fermentable sugar known as maltose; while the latter breaks the maltose up into alcohol and carbon dioxide, as described above. During this process great care is necessary in opening the jars and stirring the contents. The jars are under the care of specialists who know by experience when to open them and how many times to stir the contents. These specialists receive higher wages than the other workmen. When the temperature of the contents of the jars is the same as room temperature and the cracking noise of the escaping carbon dioxide has ceased the fermentation is complete. The fermented mixture is placed in cotton bags about 3-ft. in length and 4-in. in diameter, and in these bags it is pressed between wooden plates. The liquid which is pressed out is run into jars and allowed to settle before bottling.

Bottling is an important step in the process of wine making. The clear liquid is poured from the settling in the jars into iron pans and boiled so as to destroy any injurious ferments that may be present. Otherwise the wine might sour before reaching the consumers. The bottles are carefully cleaned and heated, the wine is bottled hot, and the bottles are sealed with clay and stored. The longer the wine is stored the better its quality.

The product of the above processes is a mixture of water, alcohol, and many other organic substances, such as dextrin, glycerine, peptone, etc., in varying proportions. This variation in the product is due to the use of different methods and to the general lack of scientific procedure in the manufacture of the wines.



THE STILL TAKEN APART.

The first wines made in China were fermented liquors. Distilled liquors were first made during the Yuan Dynasty. Some authorities attribute the development of this art to the "Northern Nation." This seems to be a reasonable suggestion in view of the fact that the manufacture of burning wines is one of the most important native industries in South Manchuria at present. Burning wines are essentially mixtures of alcohol and water in varying proportions. Most of them on the market are the result of only one distillation. The famous "Samshu" (a term meaning 'thrice fired') is the product of three distillations. It is made from the juice of a plant called "Kao-liang" by which name the wine is known in this section. This plant is a native of Northern China. The fact that the annual output of "Samshu" in Southern Manchuria is about 1,600,000 gallons, valued at about $18,000,000, indicates something of the importance of the industry. It also indicates that China has a liquor problem as well as other countries.

The oldest tea tree in Japan is still preserved in the Hiyoshi tea gardens, a well known tea grower of Sakamoto-mura, Shiga prefecture. The selected leaves picked from the trees of the garden will be presented to T.M. the Emperor and Empress through the superior warden of Hiyoshi shrine, to which the tea garden belongs.

Can Shanghai Become a World Harbor?

Menaced by the Mud of the Yangtze as Shanghai is, it is recommended that great plans be undertaken to make it the first port in the East.

It is not the tendency in the Orient to anticipate the problems of the future. The Chinese find the evils of the day sufficient without assuming the burdens of posterity, and the uncertainty of events in a country in which nothing is definitely planned and no plan is ever carried to fruition, has in turn discredited prophesy and even intelligent anticipation. The foreign resident in the East is an ardent speculator as a newcomer and a scoffer at all speculations within a few years of his arrival. No little moral courage is therefore required to put forward an elaborate scheme of development along definite lines which is based upon a judgement of the probable trend of events in the future. If the Chinese builds for the future he considers it a gamble and not an investment, and the Chinese are sufficiently good gamblers to risk fairly large stakes; but the European is more chary and it is something of a surprise and a novelty when anyone seriously approaches him with a request for really big backing in a venture which is in anyway dependent upon Chinese political movements, Chinese social tendencies, the trend of Chinese trade, or the flow of Chinese rivers and Chinese tides for its security. He is so convinced of the volatile character of everything that seems substantial in China that he almost doubts if there will be a China beyond to-morrow; and a great deal of courage, faith and vision are required in a professional man who values his reputation to insist upon the security and stability of any existing institution. All this will explain why the recent report of the hydraulic engineers employed by the Whangpoo Conservancy Board on the future development of the Shanghai harbor has aroused almost excited interest and discussion among all classes of foreign residents in the East. It seriously sketches the probable future of China, the future development of Oriental trade and trade routes, the future of half-a-dozen Chinese ports, and particularly the future of Shanghai, for some generations to come, and on the basis of these judgements suggests that something like $100,000,000 be invested in the development of Shanghai harbor to meet the conditions anticipated. This is such a radical departure from the precedent of living from day to day and of ignoring the future, and it is put forward so seriously by men who cannot afford to be regarded as visionaries that it is worthy of grave study.

The report was prepared by Mr. H. von Heidenstam, engineer-in-chief to the Whangpoo Conservancy Board, Dr. J. G. Richert and Mr. P. G. Hornell and is divided into five chapters on the general development of world communications, the competition between harbors in the Far East, the general technical requirements for a harbor at the Yangtze Estuary and its position, the technical arrangement of a world harbor at Shanghai, and the general aspect of Shanghai harbor development. It is prophesied that in the near future trans-Pacific commerce will rival, if not outrival, trans-Atlantic trade, that China will be a huge consumer and producer and that the trade which she will attract will be carried in vessels of the largest existing types and, in due course, of proportions greater than any existing, which will in turn demand of some port in the East the most modern harbor development and equipment. It is argued that Shanghai is in every sense best situated to handle and distribute this great trade of the future and that the port of Shanghai should therefore be developed at whatever cost to meet the demands which will be made upon it. The development of this argument covers nearly 30 pages out of the 54 pages of the text of the printed report. The suggestion contained in the 15 or more pages devoted to the technical problems involved, is that the Whangpoo River, upon which the Conservancy Board has been working since 1910, be converted into a great wet dock by means of locks at Woosung and that the South Channel of the Yangtze River in its estuary be deepened by training works so as to make a permanent approach to the port which can be navigated by vessels drawing from 40 to 50 feet. It is estimated that the total cost of such work, which would probably be carried on for the next 30 or 40 years, would be about $100,000,000. It is made perfectly clear throughout the whole discussion, however, that the most immediate need is for an exhaustive survey and study of the Yangtze Estuary and the approaches to Shanghai before any scheme of improvement tentative or otherwise be settled upon, and it is for such a survey that the engineers make their strongest plea. The plans which they elaborate must therefore be accepted as suggestions only, doubtless brought forward in as much detail as possible to excite discussion and focus public interest upon what they believe will be the needs of China generally and of Shanghai particularly when the big trans-Pacific trade which they anticipate, begins to develop.

One of the most striking features of the whole report is that nothing is taken for granted. The writers set out to build up their case and to prove each premise in logical sequence with the care of a lawyer who forsees a strenuous rebuttal from his opponents. They do not assume that there is going to be a big traffic in giant ships on the Pacific in the near future; they set out to prove it. To give the entire argument would entail reprinting the report in full, but the resumé of the conclusions reached in the introductory part of the report will show the way in which the argument is developed. It is as follows:

> The passenger and mail traffic show constantly increasing demands for rapid and safe communication.
>
> The development of sea trade and harbor technique has hitherto tended towards concentration. In those countries where trade is as yet little developed, progress will go in this direction.
>
> When the Chinese harbors are to be provided with deep water quays, the handling of cargo will be done by mechanical appliances in spite of labor conditions.
>
> The trade between Asia and other continents will in the immediate future increase enormously.
>
> The construction of the Panama Canal ensures the traffic on the Pacific and the Indian Ocean making great progress as compared with the traffic on the Atlantic.
>
> Among the merchants and mercantile fleets which will benefit by the increase in trade on the Pacific and the Indian Oceans, the Asiatic hold a specially favorable position.
>
> It is to be expected that the world will no longer fail to obtain the cooperation of China in the development of intercourse on the oceans. A step in this direction is the *construction of modern harbors in China.*
>
> Between North America and the Far East a large passenger, mail and goods traffic will, under any circumstances, be created.
>
> This will involve such an abundance of goods to be shipped across the Pacific that, in order to decrease the cost of transportation, big ships—with a draught of 33 feet and more—will be employed.
>
> Whether the trans-oceanic traffic will become directly connected with China or whether trans-shipment will be made in foreign harbors is entirely dependent on whether suitable arrangements are made at a convenient point on the China Coast for accommodation of big ships.
>
> From geographical, commercial and technical points of view the best situation for the harbor which North and Central China requires is to be found in the Yangtze Estuary. Here, according to our belief, will be created one of the largest harbors in the world.

In view of the plans which the Japanese have been elaborating in recent years for the development of Kobe as the great world harbor of the Orient, the distributing centre for all trade to and from the Far East, the conclusion that the best possible site for an elaborately equipped trans-shipping and distributing centre should be in the Yangtze Estuary is of peculiar interest. While Shanghai's superiority among the various ports on the China Coast is carefully pointed out, little is said in the report to prove why it should be superior to harbors in other Oriental countries —presumably because all discussion of international questions or of matters which might give rise to disputes of a political character were avoided. The following brief general discussion of this question, which is very much alive in the minds of the Japanese, is the only passage which may be construed as a reference to Shanghai's most likely rival in the Orient:

> A question of paramount importance is therefore: To *which harbor or harbors in Asia will the express traffic across the Pacific be directed?* From a glance at the map, and from what has been said previously, it may be concluded that this harbor can only be found in *Japan, or on that part of the Chinese Coast which faces Japan—probably in the vicinity of the Yangtze Estuary.* If a Japanese harbor becomes the terminus for express liners, the journey must be made by secondary ships to the continent. If, on the other hand, these liners proceed to the Chinese coast the sea journey is once and for all completed.
>
> Which of these routes will become the most frequented is solely dependent on what steps are taken for securing to China its proper part of the trans-oceanic traffic. If at a suitable point of the east coast of China a modern harbor is arranged there is no doubt that this harbor will be frequented by even the greatest liners engaged in express traffic.
>
> It is already a focus of the greatest importance. It handles one-half of the foreign trade of China as well as much of the coastwise business and, on account of the economic conditions already outlined as so much favoring a Yangtze Estuary port, it has already developed into the most important trade centre in the whole country.
>
> As an industrial centre it is rapidly rising into importance. Its shipbuilding yards and cotton mills are unrivalled in China and there is every reason to suppose that it could progress in this respect at an ever accelerating speed. The development in this direction depends on the supply of coal and raw materials which although not wholly favorable at present will steadily improve.
>
> When the country is properly developed, ample coal supplies from Hunan, Kiangsi and probably Anhui are available, as well as sea-borne coal from Chihli and Japan. Small supplies may also be obtainable from the neighborhood of Nanking and the hills west of the Tai Hu. Iron is obtainable from Hankow and also lower down the river. Raw silk and cotton are readily procurable.
>
> The central position of Shanghai makes it particularly favorable for industries whose raw materials have to be brought together from distant points since such an arrangement involves the minimum degree of handling of the manufactured article.
>
> Applied science in China as yet finds its principal field of operations in Shanghai and in this way the city acts as a centre for the propagation of technical knowledge. In addition many of the best educational institutions in the country are located there so that it is the main source of the new intellectual and industrial development in China.
>
> The resources of Shanghai in men, measures and money are comparable with those of any other city in China, and it would thus appear that there is every reason to believe that Shanghai should be able to secure for itself the future preponderance which a well placed and accessible Yangtze Estuary Port will attain. *The physical obstacles can be overcome if Shanghai only wills.*
>
> Shanghai's development is and will be in no way harmful to other centres in China. On the contrary the second rate ports and many inland towns will benefit proportionately. The decadence of certain inland towns which has occurred owing to diversion of traffic since the treaty ports were opened was unavoidable and has probably reached its limit. Such towns will have new prospects as local centres for distribution as the country develops generally.

Having reached the discussion of the actual work which must be done to make Shanghai easily accessible to very large merchant ships and to provide ample dockage for them, two possible methods of approach are suggested, one giving access through the Yangtze Estuary and one giving access through a canal to a harbor entirely separated from the Yangtze by locks. The one great difficulty in Shanghai is silt. The city of Shanghai is built upon the Whangpoo river which flows out into the mouth of the Yangtze and which is constantly being silted up by the mud which the great river throws into the sea and which the tides carry back and deposit in all the small bays and streams where there is not sufficient current to combat the tide and clear a channel. Outside the mouth of the Whangpoo, in the lower end of the south channel of the Yangtze, there are also flats which at low tide are an obstruction to navigation and which would have to be dealt with if Shanghai were to be opened permanently to ships of 40-foot draught. As the writers of the report soon dispose of the idea of cutting Shanghai off from the Yangtze and of opening a new approach by canal, they turn their attention to considering the means by which the Whangpoo, which is Shanghai's harbor, may either be cleared of silt or protected against it, and the means by which the erratic Yangtze may be induced to wash away the obstructing mud flats at its mouth.

The idea of bringing a strong fresh water current into the Whangpoo from the lakes above, or even from the Yangtze by canal, to combat the silt bearing tide is pronounced dangerous and impracticable, and the final conclusion of the engineers is that a dock harbor, arranged by closing the Whangpoo by lock gates at its mouth, so as to keep the tide and silt out, is the most sensible scheme. The following is the discussion of the merits and demerits of this plan:

> To state adequately to what extent such a scour would take place is not possible, as no similar scheme is known to have been materialized anywhere else, and thus no experience is available. This scheme is undoubtedly beset with many drawbacks and difficulties, but a final condemnation thereof must be subject to a thorough examination of actual conditions.
>
> A different course seems, however, to be open by means of which any water depth in the Whangpoo can be maintained if once produced. It consists of *closing the Whangpoo with lock gates and so transforming the whole Whangpoo river into a continuous dock harbor* with a water level corresponding to the mean water level at Woosung. This level is 1 or 2 feet below the Hsi Tai Lake's mean level, and 7 or 8 feet above Woosung Horizontal Zero.
>
> Special arrangements would then be required to allow the freshwater discharge or run-off of the Whangpoo to discharge from the basin during the low water period.
>
> The disadvantages which this arrangement seems to entail are as follow:
>
> (1) Entrance to and departure from the harbor becomes dependent on lock gates.
> (2) The traffic between the Whangpoo and the canal systems which debouch into the Whangpoo will be influenced.
> (3) Structures for closing and locking the Whangpoo would be expensive.
> (4) The drainage and the water supply for Shanghai would be influenced.
>
> In respect to (1) we beg to point out that the locks can be arranged in a similar manner to those at other dock harbors where a whole flotilla can pass simultaneously. Furthermore, the disadvantage of the difficulty and delay in passing the locks is certainly equalized by the advantage which the closing of the river offers to the navigation by the absence of strong current in the harbor. Finally it must be noticed that several of the greatest harbors in the world, *e.g.*, London and Liverpool, suffer under the restraint of the arrangement of locks which, however, has by no means checked their development.
>
> Whether the maintenance of a fixed waterlevel in the Whangpoo will entail serious disadvantages to the traffic in the connecting canals and creeks is a question to which our

present knowledge of this traffic is not sufficient to furnish an adequate answer. It seems, however, as if by small means, *e.g.*, increasing the water-depth by dredging in some of the creeks and canals, the proposed disadvantages could be converted into equally important advantages. In connection with this we beg to point out that the predominant part of the canals in Kiangsu and Chekiang provinces are practically without any tidal action.

In respect to the cost of closing the Whangpoo and building the necessary locks a summarily made estimate has given a total of Tls. 45,000,000.

The effect of such a scheme on the *sewage disposal and water supply* of Shanghai would be considerable. The maintenance of a constant water level in the river would ensure a constant fall in the sewers so that sewage would gradually get away but the conditions appear objectionable. Irrespective of the scheme under discussion an entire rearrangement of the present system would, as Shanghai grows, appear necessary, involving pumping and chemical or bacteriological treatment of the water pumped.

As to the question of the *water supply* there is no doubt that an intake direct from the Yangtze or the Hsi Tai or Tai Hu Lakes or other new sources would become imperatively necessary. This, however, would also seem to be at least a future probability irrespective of this scheme.

If we thus have shown that the proposed disadvantages are not too great to be overcome the project has the following indisputable advantages :—

(1) It is a well known and thoroughly tested solution.
(2) Any water-depth can be permanently obtained by dredging anywhere in the harbor.
(3) The constantly available water-depth in the Whangpoo will, immediately after completion of the works, be increased by 7-ft.
(4) The value of the present wharves in Shanghai will rise corresponding to an increase of their effective water-depth by 7-ft.
(5) The cost for construction of quays for a certain effective water-depth will be less on account of their lower total height.
(6) Silting in the Whangpoo will practically cease and dredging along wharves on this account will stop.

What value should be attached to the fact that this project is a thoroughly tested solution, it is difficult to say, but its advantage in this respect as compared with the fresh-water scheme (I.A. 1., which might be put down as a more less fantastic project) is obvious.

As the exchange of water between the Yangtze and the Whangpoo basin would have been stopped, no silt will enter the basin, and as no tidal current will prevail in it, the water will become almost clear from silt and practically no further silt deposit will take place. Excavations, whether in the river bottom, along wharves or for basins in the plain along the river, will thus not be counteracted by silting but will be of more lasting nature, and any water-depth can be obtained up to a certain point.

The immediate result will be an increase of the available water-depth throughout the Whangpoo of 7 feet thus bringing the minimum water-depth in the fairway up to a little more than 30 feet. All the present wharves along the shores of the Whangpoo will be subject to the same increment in their effective water-depth and their values will rise accordingly.

Furthermore, the cost for construction of new quays for a certain water-depth will be less on account of their lower total height in a dock harbor where the water level is fairly constant as compared with similar quays in a tidal harbor where the water level variations add themselves to the effective quay height. This reduction has for quays for an effective water depth of 33 feet been estimated to Tls. 200 per running foot. It is obvious that this weighs heavily in the balance, to the advantage of the project of closing the Whangpoo.

Last but not least it should be noted that as the influx of silt in the Whangpoo will cease all further training works and most of the dredging on this account will stop.

The control of the Yangtze outside the Whangpoo and the deepening of the South Channel so as to provide permanent access appears on the face of it a more difficult problem. The obstruction of the more northerly channels so as to turn a greater volume of water into the South Channel and scour it out, is considered dangerous, because if it were successful it would deprive the closed channels of water and overturn the whole economy of that section of the country, because a new silt bar might be formed further out which would be as much, if not more, of an obstruction than the present flats, and because the river might run off on some new erratic course, open a new channel, and cause unlimited damage and loss. The final conclusion is, therefore, that the simplest and cheapest way of tampering with the Yangtze currents would be through the building of training works in the south channel. This plan is briefly described as follows:

> On the southern banks transverse works, in the form of long arms advancing from the shore out to the Normal Line, are obviously indicated, while on the northern bank the works—whether longitudinal or transversal—would be in the Normal Line in the reaches Blockhouse Island—Grass Island—Middle Ground—Tungsha Spit and its continuation. Transverse cribs, if used exclusive without longitudinal connections on the northern side of the channel, would have to be of a length sufficient to prevent the flow from passing away, to any appreciable extent, from the main channel through the gaps between the cribs.
>
> The types and methods of work will in certain respects have to be those of the heaviest maritime character. The construction of a work-harbor, the selection of type of works, the creation of starting points and large special craft for constructing and placing rafts, mattresses, caissons, blocks, rubble, as required, or for driving piles, and the choice between special methods of work, are all important and require thorough investigation, including trial on a large scale, before any definite statement in this respect can be made.
>
> As regards the cost, our preliminary investigations have shown that the total is not likely to exceed Tls. 40,000,000.
>
> This project has, as compared with that previously described, the following advantages:
>
> (1) The other branches of the Yangtze would not be influenced to any appreciable degree.
> (2) There would be no permanently *increased* silt transportation through the regulated channel.
> (3) There would be no danger of scour in parts of the South Channel other than those directly effected by the regulation.
> (4) There would be no danger of the water taking a new or undesired course.

In conclusion, Mr. von Heidenstam and his colleagues give this brief summary of their plan:

> The result of our investigation of the general arrangement of a world harbor at Shanghai can be condensed as follows:—
>
> (1) An open harbor for the water-depth in question cannot conveniently be constructed on account of the prevailing silt conditions, but its possibility cannot at this stage be definitely pronounced upon.
> (2) So far as we now can see the best chance is to create a closed harbor by *transforming the Whangpoo into a continuous dock harbor.*
> (3) Access to this harbor is best effected *by regulation of the South Channel of the Yangtze by training works in this channel only.*
>
> This investigation has necessarily been of a preliminary nature and more limited than the magnitude of the problem requires. The time and information at our disposal have prevented full consideration being given to all the factors concerned but sufficient has been done to show the *prima facie* advantages of the scheme outlined. *In any case no doubt exists that if the decision to create a first class harbor is made, the technical difficulties are surmountable.*
>
> In order to develop such a scheme in its entirety, and to be assured, before a final decision amongst alternative schemes, that the best solution of the problem has been found, very extensive technical and economical investigations in regard to all issues involved will be indispensable.

The Far Eastern Review

A Monthly Review of Far Eastern Trade, Finance and Engineering, Dedicated to the Industrial Development and Advancement of Trade in Far Eastern Countries

ENGINEERING FINANCE COMMERCE

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MANILA.—Fleming, Percy Smith and Seth, Roxas Building, Room 217-218, Escolta, Binondo, P. O. Box, 214.

UNITED STATES.—J. ROLAND KAY CO., Conway Building, Chicago

GREAT BRITAIN AND CONTINENT.—SOLE ADVERTISING AGENTS, WALTER JUDD, LTD., 97 Gresham Street, Bank, London, E.C.

SUBSCRIPTION RATES: Philippines, United States, Canada, and Mexico, $3.50 U. S. C. per year. To all other countries in the Postal Union, Mex. $8 per year, postage $2 Mex. extra Single copies 30 cents. U. S. C. or 75 cents Mex.

ADVERTISING RATES will be mailed on application

Entered at the U.S. Postal Agency, Shanghai, China, as Second Class Matter. Registered at the Chinese Post Office as a Newspaper.

SHANGHAI, PEKING, TOKYO, AND MANILA, SEPTEMBER, 1918

American Policy in Siberia

Nothing could possibly go farther in confirming the faith of the idealist in the sincerity of America's declared war policy than the announcement of the purpose of the so-called intervention in Siberia, which was made public in Washington by the Acting Secretary of State August 3. This document established a precedent in international charity and altruism which is particularly welcome to residents in the Orient and is most joyfully accepted as an omen of the part which America will take in the settlement of pending questions in the Far East when the time for a settlement comes. Most Americans have believed not only in the righteousness but also in the genuineness of the American Government's advertised reasons for declaring war upon Germany. We have been told that we are fighting against despotism and for democracy, against the oppression of small and weak nations by strong nations and to establish throughout the world the doctrine that each people had the right to develop along its own lines and to shape the government best suited to its needs. All this is quite in keeping with American tradition and America's practice in her dealings with her immediate neighbors, but it is a creed which America has never before had reason to insist upon very seriously in her dealings with nations across the seas and the sceptics have felt and said that while both expediency and tradition dictated the announcement of such a policy in a war upon Germany, we should probably find to our sorrow that expediency would still rule if expediency and traditional ideals should happen to come into conflict in any other part of the world in which America might happen to be interested. The Russian situation has been a severe test of America's consistency in her war doctrine. It has seemed to a great many influential people in Paris, London and Washington highly expedient to meddle strenuously in Russian affairs, to dictate to Russia the form of internal government she should have and the sort of international relations she should establish, and then to proceed to enforce the mandates of the Allies by active military intervention. It was believed by some that if a large Japanese army, with expeditionary forces from other Allied powers could enter Siberia quickly enough Russia could be whipped into shape to resist the Germans again on the old Eastern Front and to create a diversion at any rate which would hasten victory on the western front. In the minds of many of these people Russia did not deserve much consideration. Her conduct as a nation had been most exasperating and had given the Allied cause a severe set back. The fact that the collapse of Russian military power had grown out of an internal movement against despotism and militarism and that the anarchy existing in Russia was still a blind and incoherent struggle towards some sort of democracy did not deter many diplomats from advocating what would practically amount to the chastisement and direction of Russia. It looked expedient to many, though intervention was always pronounced inexpedient by an equally large number who believed that intervention would simply antagonize Russia and that the forces diverted from Europe to carry out a Russian campaign would simply be dissipated on the Siberian steppes.

At all events, when it was first announced that America had agreed to join Great Britain, France and Japan in an expeditionary force to intervene in Russia, it was assumed by the foreign press in the Far East that expediency had triumphed over idealistic scruples and the press rejoiced, while those who had hoped to see America consistent in her policy and her ideals, looking forward to a time when these same policies would be as consistently applied to the solution of China's problems and the difficulties which have arisen out of her relations with Japan, were correspondingly depressed. The State Department's declaration of policy in an intervention which is not intervention is therefore the most reassuring document which has been published since the war commenced to those who hope to see the new international ethics, which President Wilson has enunciated and popularized, applied in the Orient as well as in the Occident. To patriotic Chinese who live in daily terror of the calamities which it seems must overtake their country, which is being ruined by an alliance between internal corruption and external aggression, the following paragraphs from the Acting Secretary of State's message should appear as the strongest pledge of fair dealing and equitable adjustment which any of the Allies have yet made to the weaker nations. Upon intervention in Siberia the following verdict is pronounced:—

> "In the judgment of the Government of the United States, a judgment arrived at after repeated and very searching consideration of the whole situation, military intervention in Russia would be more likely to add to the present sad confusion there than to cure it and would injure Russia rather than help her out of her distresses.
>
> "Such military intervention as has been frequently proposed, even supposing it to be efficacious in its immediate object of delivering an attack upon Germany from the east, would, in its judgment, be more likely to turn out to be merely a method of making use of Russia than to be a method of serving her. Her people, if they profited by it at all, could not profit by it in time to deliver them from their present desperate difficulties and their substance would in the meantime be used to maintain foreign armies, not to reconstitute their own and to feed their own men, women and children."

The declaration of policy to the Russian people—made with the concurrence of the other Allied Powers in which Russia's right and opportunity to develop along her own lines is guaranteed in the clearest possible terms and in which China should be able to read a very clear promise of the sort of treatment which she will receive when the time comes for the adjustment of her troubles—reads as follows:

> "As the Government of the United States sees the present circumstances therefore, military action is admissible in Russia now only to render such protection and help as is possible to the Czecho-Slovaks against the armed Austrian and German prisoners who are attacking them and to steady any efforts at self-government or of self-defense in which the Russians themselves may be willing to accept assistance, whether from Vladivostok or from Murmansk and Archangel.
>
> "The only present object for which American troops will be employed will be to guard military stores which may subsequently be needed by the Russian forces and to render such aid as may be acceptable to the Russians in the organization of their own self-defense."

American Finance in China

It is now six years since the American group of bankers withdrew from what was then known as the Sextuple Group, composed of banking institutions representing Great Britain, France, Germany, the United States, Russia, and Japan. The reason for withdrawal was the announced attitude of President Wilson and his Secretary of State, Mr. Bryan. Previous to the inauguration of President Wilson public intimations had been given that the new Administration did not intend to continue the policy of protecting the interests acquired by American bankers in their participation in the loans made by the Sextuple Group. No detailed reasons were assigned for this change of policy but from subsequent pronouncements it is possible to ascertain that the Administration had become convinced of the possible injury to the sovereign rights of China involved in contingent future complications which might be entailed in the collection of payments. It seems to have been believed by the Administration that the carrying out of the conditions of the loans made by the Sextuple Group might necessitate in future military pressure upon China and this eventuality was obnoxious to the democratic principles of President Wilson.

It was hoped by Americans in China that withdrawal from the Sextuple Group would be followed in due course by independent loans from American banking institutions to China. It may be safely asserted that no nation ever had before it such large possibilities of controlling the financial future of a sister republic as was opened to America in 1912-13. The Chinese were enthusiastic in their attitude towards America and were prepared to welcome American co-operation in their financial reorganization and in the industrial and commercial development of their country. This golden opportunity slipped through the hands of American bankers and apart from the formal recognition of the new republic of China, the American government took no active steps to realize its immense possibilities. Money was urgently needed in China for the disbandment of troops, for the bolstering up of the two banking institutions, viz., the Bank of China and the Bank of Communications, and for the support of the Central Government until such time as the provincial revenues would resume their flow into the national treasury. China was at one of the stages of her development where foreign loans were unavoidable, the only alternative being a powerless Central Government and an encouragement of aggressive provincial rights.

In this grave crisis, American help was not forthcoming and as far as America was concerned, China was allowed to flounder in the midst of her difficulties and to secure financial help on any terms which she might be able to make. It is not suggested that the other members of the original Sextuple Group were all willing to embarrass China or to threaten her national stability. The only point of the matter is that the American government was evidently at that time convinced that whatever might be the intentions of the Sextuple Group, its policy carried with it the inevitable implication of a threat against China's financial autonomy. This may have been an incorrect interpretation on the part of the American government, but there can be no doubt of the fact that this was the opinion of the Administration.

The entry of America into the World War and its generous loans to the Allies has brought with it a change of policy toward the Group, which is now quadruple on account of the elimination of German banking interests. The United States government can no longer dissociate itself in any part of the world from the aims and policies of its war partners. It has come to such a position of leadership that it cannot escape its large share of responsibility for world policies, whatever may be their implications. Neither can it follow any longer a policy of isolated benevolence; its good words must perforce be accompanied by practical deeds.

The situation which confronted the American government in China was as follows: China had bound herself by an agreement with the Banking Consortium, under which loans were to be made for reorganization purposes exclusively from this one source. Loans for industrial, commercial, mining, or other forms of development could be contracted by China without reference to the Group. Only two courses were open to America: either she must dispute the validity of the agreement entered into between China and her partners by which certain rights were conferred upon the Group, or she must confine herself entirely to development loans. In other words, whatever would affect in future the political development of the country would be left in the hands of the Quadruple Group while any money invested by Americans in China for development purposes would, of necessity, come under the control of political forces in which America had no share.

The American government has chosen the only wise course and by its statement issued from Washington July 29, has expressed the hope that in future an American Group will be associated with the bankers of Great Britain, France, and Japan. No mention was made of Russia, probably on account of the present impossibility of Russian bankers furnishing any money for foreign enterprises, but not with the intention of excluding possible Russian participation in future years. The method of bringing this to pass was simple. American bankers were invited to form a group; this group was to give the government an assurance that they would co-operate with the policies outlined by the State Department; the conditions of any loans were to be submitted to the State Department for approval; and with these assurances from the bankers, the government pledged itself to aid in every possible way by making prompt and vigorous representations and taking every possible step to insure the execution of equitable contracts made in good faith in foreign lands. In other words, there has been a complete reversal of policy on the part of the American government, due, as it would doubtless explain, to a complete change in existing conditions.

There has been an unofficial suggestion that it is the desire of the American government to combine all of the outstanding loans of China into one new loan which shall be divided equally among the members of the new Group. Whether this policy would include loans secured by special properties such as railroads or mines or whether it is only intended to cover loans secured solely by government bonds has not yet been disclosed. The carrying out of a scheme to combine all loans for which the Chinese government is responsible whether secured partly by property or solely by government bonds would involve many difficulties, but we are convinced that none of these are unsurmountable provided that the members of the Group are all equally pledged to the self-abnegating policy of not using the benefits accruing from loans for their own national political purposes. If the loans made on railroads, mines, or industrial properties, which are partly secured by mortgages and partly by government bonds, are solely commercial propositions and are not meant for political purposes sinister to the sovereign rights of China, then there need be no hesitation in grouping such loans into one national obligation on the part of China to the members of the new Quintuple Group. Whether or not the American government intends to attempt to carry through this far-reaching policy, such a policy, it is certain, would be for the future well-being of China by the permanent eradication of private political schemes.

Whatever may be the scope of the new policy of the Quintuple Group, the entry of Americans is prophetic of good in the future development of China. The only remaining problem is the attitude of the Chinese government. Will the government of China be able to rise to an appreciation of the importance to its own interests of the present decision of the American government? Its adherence to this policy will put out of action many small intriguers who have not been slow to involve their country in dangerous obligations in order to carry through their own plans. These plans have sometimes involved monetary gains to the participants and at other times have only resulted in the prestige of accomplishment. If the new policy is strictly adhered to, China will have one common source from which she can receive help and will be saved from the petty attempts of some of her own incompetent officers who have not hesitated to pledge important interests in order to cover a temporary need of money. It is believed that the Chinese government will align itself with the new policy outlined by America.

The Tientsin Military Conference

Since the adjournment of the Tuchun's Conference at Tientsin, its real object is becoming apparent. It was widely published in the press that the Conference assembled for the purpose of discussing the impending presidential election as well as the policy of the military coercion of the South. It is now known that there was practically no discussion of the election of a president, it being taken for granted that the position is to be offered to Hsü Shih-chang. As military men, there was more or less of a strong predilection for President Feng Kuo-cheng, but under the present circumstances of his disagreement with the Premier, it was generally conceded that he was no longer an available candidate and that Hsü Shih-chang should be put forward. However, as to this topic, there was really no serious discussion and whatever mention was made of the matter was in an informal way at the various dinners held on every possible occasion. The question as to the election of a vice-president was naturally such a delicate one that it received no attention at all. In his various manipulations during the past few months, Little Hsü, as General Hsu Shu-cheng, the right-hand man of Premier Tuan Chi-jui, is generally called, had offered the vice-presidency in turn to General Chang Tso-lin, of Fengtien, and to General Tsao Kun, of Chihli Province, and possibly also to Chang Huai-chih, of Shantung. The two former were the two leading members of the Conference and having both had the alluring offer of the vice-presidency, it was natural that neither of them cared to mention the subject to the other; least of all was it a topic that could be publicly discussed where others such as Ni Shih-chung, of Anhui Province, were present. The surmises as to the Conference having decided upon one or another of various candidates for the vice-presidency are unauthentic. The question received no formal attention and was never even discussed at the meeting of the Conference. Chang Tso-lin had no intention of yielding his chances to Tsao Kun, nor Tsao Kun to Chang Tso-lin. The subject was taboo.

The real object of the Conference was the discussion of the military coercion of the South. Tsao Kun had been ordered southward as well as Chang Huai-chih. The duty was placed upon them, together with Lung Chi-kuan, of capturing the province of Kwangtung and subduing the forces centering around Canton. Neither General Chang nor General Tsao had any intention of obeying the orders of the Central Government as to the Canton expedition. It was recognized as the scheme of the Premier, Tuan Chi-jui, which had not won the approval of the President. It suited the personal wishes of Generals Chang and Tsao not to proceed southward for neither of them has shown himself at all anxious to engage in bloody fights. Both have been content in the past to issue high-sounding manifestoes by having a large number of troops surrounding them and to draw from the government sufficiently large sums to enable them to accumulate large private fortunes. Up to the present, their ambitions have been centered in these objects and there is no reason from their records to believe that they were anxious to sacrifice themselves in a scheme which originated in the mind of the Premier.

It was necessary, however, to give due consideration to the prestige of the Premier. For this reason it was decided that it should be given out to the public that the generals assembled were all willing to go to the South and to carry out the policy of the Premier, while at the same time they agreed to demand such large sums from the government as would make it impossible for the government to comply with their request and thus the expeditions would never materialize. Willingness to go was to be the watchword, but this willingness was to be based upon the furnishing of funds which, they knew beforehand, the government would be unable to consider. This clever plan has been relied upon to save the "face" of the military party, of the Premier, and of all others concerned.

As a matter of fact, the policy of President Feng in attempting to settle the dispute with the South by negotiation was strongly favored by all the generals and the policy of military repression advocated by the Premier was strongly condemned. It was conceded that the policy of repression owed its origin entirely to the machinations of Little Hsü and for this reason strong opposition to this clever young general developed in the Conference. Chang Tso-lin asserted that he had been deceived on seven different occasions by Little Hsü, and Tsao Kun had his own detailed category of grievances against the clever schemer. Various suggestions were made as to how he could be got rid of but the common opinion of the generals was that Premier Tuan would not listen to suggestions of dismissing Little Hsü. It was felt that the only way that Hsü could be got rid of would be by overturning Tuan as Premier. It may be said that the general leanings of the Conference were entirely in the direction of President Feng and approving his policy of conciliation and that they were all directed against Premier Tuan and his policy of repression. The underlying reason for all this was the mischievous scheming which has been carried on by Little Hsü for the past few months in which each one of the leading generals of the Conference felt that he himself had been duped and placed in a false position toward his colleagues.

All in all, the results of the Conference have been a great diminution in the prestige and power of Little Hsü. It is certain that he is fully aware of the change in his position for he has removed his family from Peking to the Tientsin concession and has made no attempts to bring himself to prominence in social relations with the visiting military governors. It is well-known that he is also opposed by Liang Shih-yi and by Sung Hung-yi, whose prestige and power among the young leaders of the country are still to be reckoned with. There is also said to be a growing party among the trained military men which strongly opposes Little Hsü's introduction into the ranks of military men. He was only a civil secretary to Premier Tuan and by his constant exertions has succeeded in attaining the rank of a major-general in the army though he had no military training in his youth and has had no military experience during his official career. The military men who have come up out of the military schools and have constantly served in the army are said to resent strongly Little Hsü's influence in military affairs and a proposal is being made that a joint recommendation should be made to the Board of War cancelling Little Hsü's military appointment. Whether or not anything comes of this move, it is too early to decide but that there is a strong feeling of opposition against him among the military men cannot be called in question.

The most unfortunate feature of the whole situation is the uncertainty which the decline of Little Hsü's prestige throws upon the future of Premier Tuan. If Hsü is forced into retirement, it is possible that this can only be accomplished through the downfall of Tuan as premier, so many of the Premier's best friends still hope that it can be accomplished without the necessity of this drastic measure. Tuan is liked by Hsü Shih-chang and the military men have no objection to him except as they believe him to be in the hands of Little Hsü. If Tuan has the power to divest himself of this incubus, and at the same time maintain friendly relations with the military governors, it is entirely probable after the election of Hsü Shih-chang as president, Tuan will remain as premier. However, it is equally certain that if Tuan cannot rid himself of this mischief-maker, his position as a candidate of the premiership under the new *regimé* is doubtful if not, indeed, entirely impossible.

That the policy of conciliation toward the South has been greatly strengthened, not only by the Conference but by other events during the last two weeks, is a certainty. Four of the Yangtze military governors have telegraphed approving this policy. These were the military governors of Hupeh, Hunan, Kiangsu, and Kiangsi. They must have been certain of the opinion of the Tientsin Conference in this matter or otherwise they would not have been so explicit in their advocacy of conciliation. These four military governors represent the districts through which military expeditions would need to pass on their way to Canton, and the strong expression of opinion in favor of conciliation can be taken to mean that they would give no support to these expeditions en route.

Whatever preparation there may be during the forthcoming month for an expedition against the South, it may be dismissed as camouflage. Ni Shih-chung is said to have expressed himself openly at the Conference as not willing to risk his accumulated property in any wild goose chase of the South. This may be considered to represent the average opinion of the other military governors whose pockets have been lined so thickly during their terms of office with ill-gotten gains. None of these is anxious to risk his possessions or his life in an expedition which has for its aim the chimerical proposition of unifying the country. Union is not their motto; their be-all and end-all is personal profit.

The present prospects are that Hsü Shih-chang will be elected president by the new Parliament and that no election of vice-president will take place for some months to come unless General Chang Tso-ling manages to force an earlier decision. It is expected that the Canton Parliament will also elect Hsü as president, and thus a basis of negotiation will be established between the two opposing parliaments. A movement is on foot for the dissolution of both parliaments immediately after the election of a president and agreeing among themselves to allow the president to nominate a Drafting Committee of a permanent constitution. Little consideration has been given as to steps beyond those mentioned. It is expected also that if Hsü is made president, he will seek to continue Tuan as premier, but whether or not Tuan's position is tenable depends upon his power of dismissing his chief adjutant, Little Hsü. The military governors are returning one by one to their provinces and are evidently in a mood of watchful waiting.

The Preparation of Leaders

Not long ago a clever young foreigner was in China observing the Government railways. He has since departed to become the Freight Traffic Manager of the railways owned by his home government. His record exemplifies a policy which needs consideration.

Graduated from one of the best technical colleges in the United States, he first worked there as a factory hand in a large shop manufacturing electrical machinery. After three years he returned to his home land to become a machinist in a railway repair shop. He worked up to a foremanship but resigned shortly to become a track laborer. Through the grades of ganger and foreman he became a district inspector, only again to resign and begin as a brakeman. In train service he reached the grade of conductor, when he was transferred to the general office as a clerk in the rate department. Now he is at the head of that department and holds one of the three or four best railroad jobs in that country. And he is still a young man.

Does this record merely confute the maxim that "A rolling stone gathers no moss"? Or is it to sustain the proverb that "You can't keep a good man down"? If such were the only moral of this tale we should not waste this much print paper upon it,—not at present prices. But does any one believe that in twelve years out of college even an unusual young man "out on his own" could thus gaily flit from department to department of a great railway organization, always begin at the bottom and always climb well up the slope without sometime, somewhere, striking a snag to make him stop if not to send him rolling? Does any one believe that a man with the sagacity to hold these higher positions would reach a post of responsibility in one department and then blithely chuck it like a gambler to become a track laborer?—unless he knew the cards were stacked. And that's the point. The cards were stacked. Japan developes her industrial leaders that way.

There is something in this idea for the rest of us. In most Allied countries industrial leadership has been a form of greatness. "Some are born great, some achieve greatness, and some have greatness thrust upon them." 'Tis even so. Hereditary leadership has a certain hold because there are still many people who take pride in fealty to a family. Besides, some families are good stock, and being good stock they put their younglings through a sufficient apprenticeship. But generally, hereditary leadership lasts only so long as it takes some barbarian invader, bent on achieving leadership, to wrest away the family fortune.

Most of the standard modern industries have been built up in a generation or so by men who began at the bottom, built additions to their shops as business improved, then bought out competitors whom they couldn't undersell, incorporated with companies that were too big to buy, made "gentlemen's agreements" with corporations that could not be "trustified," and finally got into the foreign market when a bad season caught them overstocked. Thus have they achieved leadership.

In China the situation is reversed. For centuries scholarship has been the road to preferment. When the old order fell before modernity, Chinese faith in education was not at all shaken. It was merely transferred to a different field of learning. So we have young men whose business experience barely went beyond engaging room and board returning from abroad with a college degree, and after a clerkship in some yamên for two or three years they are given most important positions of responsibility and thus have leadership thrust upon them.

What improvement in methods of work or application of materials can be expected from officers who know nothing about either? Finely equipped as these men may be for the theoretical phases of industry, they are utterly incompetent to control the fundamental factors upon which the theoretical phases rest.

Yet, the day of the self-made man is passing. He was prepared to manage the business which he had built up, for he had grown up with it. But it is now full grown. How shall his successor grow up? Who shall draw Ulysses' bow? A modern enterprise requires the services of half-a-dozen learned professions, it encounters foreign relations, it involves sociological re-actions of far reaching consequence. It is concerned with materials and the command of material forces, to be sure, but it finally involves very nebulous forces—forces whose power is very real nevertheless, and whose strength comes to be measured in material results. When it comes to dealing with these more intangible factors, such as responsibility for an enlightened labor program, relations to other industries, and support to national policies, these successful blacksmiths and post-graduated tie-tampers, though they be "empire builders" have scarcely done better than to "muddle through." One "muddle through" was good enough. No one else was doing any better. It will continue to pioneer new institutions. But for large, complex, standardized enterprises, it will have to give way to something better.

The "self-made" man has been one of the first to recognize his shortcomings in dealing with social forces and in adjusting his relations to changing conditions. Many a board of directors in Western countries have tried to correct this flaw. They have cried for college men—to begin at the bottom. And the college man, knowing that "top" experience only is fatal, has cheerfully responded. But the "self-made" men who were his managers, "muddling" as usual, generally let him drop out of sight about as soon as they were sure that he had really begun. Many is the college man who has wished that the eight or ten years spent in academy, college and university, had been spent instead working in the various departments of the industry of his choice. But by force of preparation, industry and ability many have slowly forged ahead. But they dared not miss a single chance. Transfers from one department to another mean the missing of many chances. So whenever they have reached the top, it has been by the road of specialization.

The hit-or-miss, go-as-you-please lack of system for developing leaders either brings to the top men firmly grounded in details but deficient in the wider aspects of leadership, or specialists expert in one department but with small experience in other sides of the business. It will be many years before Chinese example will lead to the selection of leaders who have neither special training nor detailed experience. What is the argument against a system of planned experience added to general and technical education? Can we compete against it? Doesn't China "lose face" by failing to apply it? Allied sentiment will not tolerate any educational Prussianism which would ordain from the cradle what occupation a lad is to follow and then force him into the *regimé*. But when a youth has made his choice of work, does not the Japanese method help him to find himself within that work, to find his field of greatest usefulness and greatest happiness? Unlike Japan, our governments as a rule cannot make this decision. It must be made by the heads of our great business institutions.

Cessation of Railway Construction Work

The International Corporation which finances the Siems-Carey Company's projects in China is calling a halt with regard to railway work. This is due, of course, to what the country correspondent delights to describe as a "concatenation of circumstances." The necessity which exists to apply every cent and every scrap of possible energy to defeating the Germans is in general responsible. Then the high price of silver exercises considerable influence, coupled with which is the higher cost of railway material. To these factors has to be added the lack of control in the territory in which the surveyors of the projected line from Sinyang to Chengtu, in Szechuan, described in our July issue, must operate to complete their survey. The last condition is the one solely responsible for the suspension of survey work at this time.

Bandits are now keenly on the lookout for engineers accompanied by hard silver. Once upon a time the men of the road used to covet cash only, but the days of such singleness of purpose seem to have passed. They have discovered that real live white engineers are worth bagging. It will be remembered that Chief Engineer Kyle was recently captured by bandits just as he was beginning a walk over the 908 miles of the route to Szechuan. With him the bandits secured some 30,000 silver dollars, and after haling him over miles of landscape for scores of nights they received reward from the Government to let him go. The head bandits were taken into the regular Chinese army! Perhaps this is as it ought to be in China, but it is disconcerting to anyone desirous of doing serious business in the interior.

In the case of this railway stoppage of work means that no further surveying parties can be sent out for some time, and the final survey has, necessarily, to be suspended. A delightful commentary upon the capacity of the Tuchuns who claim the right of dominance of political affairs to run the business which legitimately comes within their own particular sphere!

The result is that until the war is over, until peace can be secured in China, and until the ubiquitous bandit can be compelled to follow more honest avenues of toil the engineers working on the Szechuan project must return to America. A small staff will be maintained in Peking to deal with anything arising as a result of the work so far done and the capital so far expended, but expenses will be reduced to a minimum. The engineers will probably be homeward bound by the end of November, and when they will return to resume their work cannot be foretold with any reliability by any prophet in this hemisphere.

The closing down of the Siems-Carey railway organization practically brings to an end all important railway construction work in China for the time being. There were hopes that the survey of the line of Szechuan would be completed and earthwork be commenced despite the war, but these vain dreams have now been rudely dissipated.

The construction of the British line between Wu-I, near Pukow, and Sinyang, on the Peking-Hankow railway, was arrested at the outbreak of the war, though much of the earthwork had been done. Engineers and laborers were summarily knocked off, offices were closed, and residences newly erected at Wu-I were vacated. The finished embankments are now grass grown and scored by rains, and thousands of people in the region traversed by the route have been deprived of legitimate reproductive work. Had the Chinese Government possessed the wisdom to accept a proposition made in the first year of the war by the banks to supply a silver loan to continue operations the earthwork could have been totally completed long ago, and, as rails could have been secured from the Hanyang Ironworks, the line might have been in operation, even though such operation would have been dependent upon limited rolling stock borrowed from existing lines which can ill-afford to loan material of any kind. Still a makeshift could have been effected. As it is the Government is paying interest on gold money it cannot get and which it would be folly to take and convert into local currency at such high rates for silver as now obtain. By borrowing the silver when it was offered the Government would have saved money, secured work for its people and acquired for itself a profit-earning line through a prosperous district. Instead it has deteriorating property, idle construction equipment, and big interest bills to meet.

On the Wuchang-Canton section of the projected Hukuang system work has also been stopped. Though connection has been made between Wuchang and Changsha, only a portion of the line—from Wuchang to Yochow—is in operation, the operation of the balance being held up by disturbed conditions and lack of funds. The time has come when engineers will have to be shelved for "the duration of the war" at least, and tools downed. Unless order can be restored and financial arrangements made to allow the section between Yochow and Changsha to be opened to traffic a valuable earning factor will be given over to rust.

Enough money has been squandered on the internicine strife of the past year, to say nothing of the past eight years, to build the whole line to Canton, and when it is mentioned that the Northern generals are at this writing waiting on the Treasury for the small sum of $15,000,000 per month to continue the "war" with the Southern forces it can be estimated how much money has been and will be flung to the dogs—enough in fact to build all the lines already surveyed in the country. If it takes $15,000,000 per month to finance the Northern forces how much must the Southern armies require to keep up their end of the merry game? And so far they have managed to sustain themselves to the discomfiture of the Northern forces. Add what the South has spent and will spend to the total squandered by the North and readers will get some idea of the wealth dissipated on a mighty poor national enterprise. Yet this goes on gleefully while the country is without one decent highway, with canals silted, with resources undeveloped, with industry untouched, with the Treasury bankrupt. "High financiers" find it easy to raise most questionable loans on the richest of the country's mineral and other resources, and the patriotic field-marshals and generals and majors and corporals and privates indulge in a wild orgie of expenditure while ever funds can be secured in so simple a manner. Is it any wonder that observers with the welfare of this country at heart are in despair, and are asking how long it will be before the international bailiff puts in his appearance?

"China—a modern Laocoon—is in the toils, being slowly strangled before all eyes by those intent to prey upon her vitals," is how a correspondent of the *North-China Daily News*, writing from a centre where the Northern armies are operating, puts the case.

The Oppressed Chinese

The gloomy mess into which the military leaders in China are driving the country has worked a phenomenon among the publicists, or at least those scribes who live in China. It has ranged them all on one side. Invariably they are at loggerheads, some favoring one side in Chinese politics, some championing another; some espousing this radical reform or that, some decrying any sort of innovation at all. If any now support the military leaders of the North they are preserving a very marked silence. Those who remain articulate are unanimous in their condemnation of the serious and appalling state into which the affairs of the country have been plunged and of the men responsible. The chorus of denunciation is stentorian and strenuous.

That very fact makes it necessary to warn people unacquainted with Chinese affairs that all Chinese are not to be judged by the handful of blind and conscienceless braves and brigands who have managed to seize and hold power simply because they command enough men with rifles to overawe the populace. The military leaders who are desolating the country, disposing of its resources, and demoralising its people can be counted on the fingers. They are powerful because they have behind them hordes of men with rifles; not because merit has secured for them high position in the state. They have made themselves independent of central control, and because of their power for evil they are able to command what they want from whomever they want it. The voice of the people does not reach them. They are oblivious of popular opinion and popular sufferings. They have no knowledge of national affairs, and perhaps little of the real geography of their own country; they have had no contact with statesmen and, therefore, know nothing of statesmanship; they are guided by what is expedient, what profits them, what will give them power. They have no use for a republican form of government in the true sense of the word, or for democracy. Under them republican institutions could never even begin to thrive. Parliamentary law as fostered by them would be a mockery. The existing so-called parliament in Peking is their product. It is an unmitigated farce. Before it was inaugurated it was told, for instance, what it had to do with regard to the forthcoming presidential elections. Members were plainly warned what would happen if they did not follow the dictates of their masters. There are but two or three independent members in the whole institution. The majority have been paid sums of money to represent various factions. "Elections" were faked, and mostly the competition was confined to the purchase of seats. There was no question of the merit of the candidate, or his views or policy.

Knowing this; appreciating what is the cause of the present demoralization, it would be unjust on our part if we did not do everything in our power to dispel the idea that is likely to form in the foreign mind that the whole of the country is corrupt, venal and unpatriotic. Happily that is not so. There is a great body of intellect in China beaten into silence because it has no means of resisting the power of the military despots. Merchants and scholars, and particularly the educated young men, are groaning under the yoke—helpless. They bitterly realize what the present ghastly disregard of the public weal means; they know that the trend is to national disaster. But what can they do? They are unable to resist with force the armed power of the ignorant Tuchuns, for the simple reason that they cannot secure the force. The South is doing its best to beat down militarism, but unhappily it has to resort to the same evil to achieve the smallest success. There are one or two Tuchuns who know what the country needs, and who are opposed to the suicidal policy of their colleagues. They are General Li Shun and others on the Yangtsze. To these men the sober elements look for salvation, and, if hopes are dashed in that quarter, to whom must they turn? They hesitate to appeal to foreign countries because foreign policies in the past have been questionable, and present-day views are not understood. On the one hand they see the money by which is perpetuated the rule of the militarists coming from a foreign country. Japan is doling out millions of yen at a recklessly rapid rate. Every yen so secured by the militarists goes to the overthrow of democratic ideals, and the people suffer. Until this flow of ready money ceases, until foreign nations realize what they are doing in permitting the perpetuation of the military policy, the people of China have no hope of coming into their own. Once let the Allies take a stand to demonstrate that they are ready to help democracy and then there will be a tremendous awakening in China. Then the real Chinese will be able to effect reforms and demonstrate their capacity to develop along modern lines. There is abundant equipment for this work lying dormant in the country, afraid to move, oppressed and inarticulate. What the foreigner abroad must not think is that the Tuchun is typical of his compatriots. He is not. He is of a class that sustains itself only by bullets and bayonets. Any brainless brigand can do that who manages to work himself into a position which enables him to secure the product of the arsenals. Take the guns from them and they could not stand a day. That is the real test, after all.

White Coal and Gold

In his contribution on another page Professor Middleton Smith writes with his usual ability in building up an argument—in which he gives full rein to a scientific imagination—upon a foundation of solid facts. He gives us data about the rivers of South China which show us, at once, the remarkable volume of water which is between Yunnan and the sea. He does not remind us that, hundreds of years before Christ, the Chinese practiced hydraulic engineering in that huge district; nor does he tell of the water-wheels without number (inefficient as they are no doubt) which have been used for, nobody knows how many, centuries in the grinding of rice. But he grips our interest in his story by a vivid description of the effect of a demonstration with a small portion of the equipment of his engineering laboratories upon his Chinese visitors; and we suspect that, for all he may say about the academic side of the question, he uses his greatest eloquence to convince his Chinese friends that it can be said of hydro-electric schemes, as, indeed in nearly all engineering work in China "There is money in it." That really is the thought which runs through the whole of his argument; and that is what will appeal to Chinese financiers, as to those of any other nationality.

At the present time the demand in China, generally, for electricity for lighting purposes is much more noticeable than the demand for power. Indeed, it may almost be said that outside of the treaty-ports and Hongkong there is no demand for electric power in China. It will, therefore, probably happen that, in the beginning, the hydro-electric plants will be used simply for lighting towns and villages in the interior. Then, generally, there will come the transmission of electric power to other towns or villages further away. We believe that already there is quite an up-to-date hydro-electric plant in the province of Yunnan and that there is, in connection with it, high-tension electrical transmission. We should probably find it difficult to discover, exactly, what are the running costs, but the very obvious fact that the power which drives the dynamos requires no fuel must make the working of the plant cheap. The difficulty, usually, with these schemes is the capital outlay. If a plant is to be designed efficiently and on a large scale, it usually means a fairly large capital, and one of the greatest of problems, as the railways have demonstrated, is the raising of the money necessary to inaugurate large schemes.

There has been a remarkable increase in economy in the large steam plants which furnish electrical energy in Europe and America. A great deal of that has been due to the many improvements in steam turbines. It has been found, also, that concentration of power leads to economy. As the largest steam turbines built to-day are twelve times the capacity of the largest reciprocating engine of fifteen years ago, it is evident that we may expect to see a still further concentration of power for electrical generating purposes. The cost of a steam-electric plant just before the war was about one-third of what it was fifteen years before, but the electrical energy obtained from a pound of coal was fifty per cent. more. But still the coal used in these large steam-electric plants had to be paid for, while "white coal" may be had, as "fuel" for water-turbines, for nothing. It has been calculated, from the returns of steam plants, in the United States of America, that the coal works out at about $11.50 gold per annum per cent., installed. That is to say, on a 20,000 killowatt plant it would be $230,000 gold per annum per fuel. It will thus be seen that, even if the hydro-electric plant is more expensive to instal in the first place, it can, as it were, afford to cost more. But it obviously will depend upon local conditions as to whether it is more expensive to put in water turbines instead of a steam plant: the cost of labour may be a very large factor and labour in China is cheap.

We should, of course, like to see the report of a competent Board of Engineers who had examined, however roughly, this general problem of water power development in China. It is a matter which will quickly repay any reasonable expenditure. It may be that some enterprising provincial Government will go closely into the matter. In the meantime we hope that all officials will encourage the installation of modern and efficient hydraulic machinery, for it must be confessed that all of the water-wheels used on the scattered isolated plants utilize only a fraction of the power which is available.

The day will come when the use of electric power will become popular in China as in other countries. A very great demand will arise when the mines are opened up. It may even come to pass that electricity will be used in agricultural work. The comparatively new process of obtaining nitrates suitable for enriching the soil from the nitrogen of the atmosphere, by means of electrical discharges, has proved successful beyond the dreams of its most sanguine sponsors in Europe. We may see it at work in China in the days when Western science is applied to agriculture, as well as to the many other branches of industry in the oldest country in the world.

China's Railways

The first report covering a full year's operation of the lines constituting the Chinese Government Railways has now been published by the Ministry of Communications. It covers the calendar year 1915. A preliminary report covering the operations of the same lines for the first six months of the same year was issued some time ago. The present report gives the data for the remaining portion of the year, and combines the figures for the two half-years into a total for the year.

This report serves as a conspicuous milestone in the progress of China toward modern ways. Readers are doubtless familiar in a general way with the history of railways in China: how as a foreign innovation it was resisted, how China seemed to be parcelled out among the nations by means of railway concessions, how an announced policy of national railway building as opposed to building by the provinces served to bring about the revolution which dethroned the Manchus.

Most of the present railway lines were built under agreements with foreign financial groups. Under the Empire each line was treated as a separate distinct entity. When the Republic came into power, the organs responsible for railways soon began to realize how much more simple their task would be if there were less diversity in the methods of doing business upon the several lines. It was forthwith decided to make a start toward uniform practice by first providing a uniform classification of accounts. The accounting practice at the time followed French, German, English, and Indian precedents, depending on the previous experience of the chief accounting officer. These foreign accounting officers together with Chinese accountants from the same lines, and from the Ministry of Communications were constituted a commission to frame the uniform classification of accounts. Professor Henry C. Adams, for many years in charge of statistics and accounts for the Interstate Commerce Commission was engaged as adviser. Classifications covering construction, operation, and financial control of the lines, as well as prescribing certain fundamental statistics were promulgated to take effect January 1, 1915. The report just issued, therefore, covers the first year in which the same classification of accounts was used upon all of the lines composing the Chinese Government Railways. Because so many of the definitions and instructions used were essentially on trial, the volume is called a Preliminary Report.

According to this report, the Chinese Government Railways consist of 5,444 kilometres of line—about 3,150 miles. This does not include 276 kilometres of a line which had been recently put into operation, but was technically under construction. Neither does it include 242 kilometres of short lines owned by private interests. Besides, 2,399 kilometres of lines having fiscal autonomy are not included. Among the latter, is the line to Tsingtao in Shantung built by the Germans but now taken over by the Japanese. The line near the Indo-China border built by the French is another of the sort, as well as that portion of the trans-Siberian railway in Manchuria and the line from Harbin to Mukden, which was built by Russia. The map which the report contains, shows the Chinese Government Railways consist of a main system, which is situated principally north of the Yangtze river, and several short disconnected lines upon the fringes of the country. These mark probable objective points for future construction.

The main system now officially in operation extends roughly in the form of a capital K. The upper extremities reach Fengchen near the Mongolian border and Mukden in Manchuria. The lower extremities touch Hankow and Hangchow. The junction of the side stroke with the main stem locates Peking, and the two side strokes come together at Tientsin. There are some branches from the main stem which because of contract arrangements are classed as main lines. One of these has now been constructed through so as to form a sort of cross bar upon the lower part of the latter.

Disregarding the fact that there is no car ferry or bridge over the Yangtze river, 4,915 kilometres out of a total of 5,444 is contiguous line. All of the branch lines are included in these 4,915 kilometres, but have a total of only 369 kilometres. Except for one line of 243 kilometres, which has a gauge of 1 metre, all have the Standard gauge—4-ft. 8½-in.

Although the requirements of through traffic and the unification of accounts tend to emphasize the point of view that the Chinese Government Railways constitute one system, yet the conditions under which most of it was built and under which it is now operated make it necessary to recognize the individuality of separate lines. Fifteen separate names appear in the list of roads. Of these, ten embrace the contiguous line and five represent scattered short lines.

The report contains no data concerning the character of rail and ballast in track, length of tunnels, or number of culverts and length of bridges. Regarding rolling stock, however, the data is rather detailed. Ordinary passenger cars are divided into three principal classes: first, second, and third, freight cars, "goods wagons," are classed as covered, open and special. The last named account for only 279 out of a total of 10,652. Open cars account for 7,982 compared with 2,391 closed cars. The closed cars have an average capacity slightly larger than the open cars. The average for all cars is approximately 46,000-lbs.

The total investment in the Chinese Government railways is given as $409,523,352 (Chinese silver)—an average of $75,226 per kilometre of line, or a little over $121,000 per mile of line. This investment has been made principally by means of mortgage bonds, investment of government funds, and additions to property through surplus. At the close of the year these sources compared as follow:—

Mortgage bonds	$274,040,303.48
Permanent Government Investment ...	108,649,720.90
Additions to property through Surplus	19,464,591.3

The importance of building as economically as possible is emphasized by a table in which it appears that the five lines having the highest cost per kilometre of line were unable to meet all operating and financial obligations; while of the five lines able to meet such obligations, only one had a cost in excess of $70,000 per kilometre of line.

Operating revenues for the year were $57,062,359, or $10,477 per kilometre of line—$16,851 per mile of line. Of this amount, 58 per cent. was obtained from freight, 37 per cent. from passengers, and 5 per cent. from miscellaneous sources. On five of the lines passenger revenue exceeds "Goods" revenue.

With one exception, these five lines were unprofitable. That exception, however, affords an interesting subject. It is a short line—49 kilometres—doing almost exclusively a passenger business out of Canton. It corresponds very closely to the suburban lines which are a common feature of the large centres of population in Europe and America. The success of this line hints at possibilities of this sort in connection with other large cities in China. It has the highest earnings per kilometre of line of any road in China—$17,385.

Operating ratio is remarkably low—53 per cent. The line between Peking and Hankow has an operating ratio as low as 42 per cent. Only one of the lines entering the contiguous system has a percentage above 65. Among operating expenses, general expenses, seem to be unduly high, being 16 per cent. of total. On a considerable number of the lines, this expense is greater than the cost of actually transporting the traffic over the line. This is sometimes explained by the necessity of conducting business in more than one language. But this explanation is hardly adequate. Costs of police forces and bonuses to employees, are large items charged to this head.

Out of net operating revenue amounting to $26,803,828, some $16,415,876 were required for interest payments. Other financial charges required a net of $800,000 in round numbers. Of this, "loss on depreciated currency"—a drain which railways in most other countries do not face—amounted to $44,504. It is well known, however, that since 1915, Chinese railways have suffered considerably more from this cause. Interest charges in China vary widely from year to year due to the effect of fluctuations in the rate of exchange. Interest payments on Chinese Government railways must be paid in foreign denominations. The purchase of a fixed amount of English pounds, say, cost a great many more Chinese dollars in 1915 than in 1916. In 1915 the price of silver was far below its present height.

In computing the interest charges above, nothing was included for return upon funds invested in the system by the Government. At five per cent. this would have amounted to

$5,432,486. Still there remains the tidy sum of $4,151,268, representing the entrepreneur's profit.

Thus out of every dollar of revenue 53 cents goes to cover the cost of operation; 30 cents to cover interest and other income charges; and 17 cents is at the disposal of the Government. If five per cent. interest be allowed on "Permanent Government Investments" nearly 10 cents may be regarded as an investment return and a little over 7 cents as business profit.

After interest on Government investment is allowed for, four lines out of the fifteen show a credit balance for the year. But these four lines comprise 2,468 kilometres out of 5,253 technically in operation—practically half. Only one of these profitable lines—the Canton-Samshui—may be called a short line. Of the remaining ten operating lines—one was under construction—seven may be considered short lines, some of them being isolated, others being branches to the profitable trunk lines. In China, as in other countries, short lines in themselves as a rule are not profitable. But as "feeders," they are very valuable to the trunk lines with which they connect. When the larger plans for the development of the Chinese railway system have resulted in through connections for the remaining short lines they will have a similar value, whether or not they themselves show an actual profit.

Only five per cent. of passenger traffic, as measured by passenger kilometres, is above third class. The rate upon this class averages slightly over one cent per passenger kilometre. The first class rate is nearly three times as high.

Freight is divided into seven classes, among which mineral products take the lead with 40 per cent. of the total tons carried. In revenue, agricultural products lead, with a little over one-third of the total. Mineral products and manufactures are next in order in revenue. Service stores compose over one-fourth of the tonnage carried. Average rates vary all the way from one-fifth of a cent per ton kilometre for mineral products on one line to four and one-tenth cents for animal products on another. The average rate for all classes of traffic, all lines, was one and four-tenth cents per ton kilometre.

The average train load was 206 tons. To a certain extent, this is a fictitious average for the reason that in the case of car-load shipments weights are assessed on the basis of the capacity of the car rather than upon the actual amount of the commodity loaded. However so much of the tonnage consists of coal, salt, wheat, barley, rice and similarly heavy commodities, that on the whole there is little difference, between these estimated weights and actual weight.

Some of the significant statistics for the year are as follow:—

	Total	Per kilometre of line.
Investment Assets	$409,523,352	75,225*
Operating Revenue	57,063,000	10,477
Operating Expenses	30,258,532	5,556
Operating Percentage	53	—
Net Operating Revenue	26,804,468	4,921
Surplus after fixed charges	9,671,534	1,841†
Number of Locomotive Kils....	29,334,839	5,386
Number of Train Kils.	20,494,650	3,763
Number of Passenger Originated	25,230,978	4,633
Number of Passenger Kilometres	1,901,524,065	349,160
Average number of Passenger per Passenger train	199	—
Number of Tons of Goods originated ...	6,729,151	2,720
Number of Ton Kilometres	14,813,791	413,289
Average tons goods per goods train ...	206	—

* Based on 5.444 kilometres owned.

†Based on 5.253 kilometres underlying. Other computations based upon 5.446 kilometres operated, which include approximately 2 kilometres leased from South Manchurian Railway.

A Moral that Adorns a Tale

Last April a boat was attacked by pirates off the Chekiang coast and a British passenger, the Rev. H. E. C. Graham, was murdered. The facts were duly established at the preliminary inquest and the Chinese Government, when informed of the occurrence, promised to pursue and punish the criminals. Time dragged on, however, and little or nothing appeared to be done. The British Minister, therefore, suggested that it might be well to send a British gunboat to assist the Chinese Naval Authorities in the discharge of their duties. This produced some effect, for it was announced very shortly afterwards that a great pitched battle had taken place between the water police and a band of pirates, in which 44 pirates were stated to have been killed and over 40 to have been captured. Subsequent investigation, however, proved that none of these pirates had any connection whatever with the murder of Dr. Graham. His Majesty's Consul at Ningpo, therefore, proceeded on board H.M.S. *Cadmus* to investigate the matter personally. Within a very short time the British party succeeded in finding on a small island various articles belonging to Dr. Graham which furnished a clue to the real culprit. This proved to be a certain Hsiang, a well-known pirate, who had bought himself off at the hands of the water police at Haimen for the sum of $3,000, and was then employed in their service together with other members of his merry band. But the Consul's difficulties only then began, for the local authorities put every form of obstruction in his way and pressure had to be applied from Peking before a proper trial could be obtained. Finally justice was done, the murderer Hsiang was condemned to death and executed on July 24. No further compensation of any kind was demanded by the British authorities and the Consul and gunboat withdrew from the neighborhood, to the satisfaction of all parties, except the wife of Hsiang, who angrily claimed from the water police the bribe which her husband had paid them but which had not availed to save him from the arm of the law.

There are two morals which the Chinese would do well to draw from this story. The first is that whereas when two German missionaries were killed in Shantung it lead to the seizure of Kiaochow (which was one of the direct causes of the Boxer rising and the misfortunes that fell upon China in consequence), the British, in this case, merely demanded that simple justice should be done. And, secondly, that it was necessary in order to obtain simple justice to make a display of force by sending a gunboat to the scene. If the Chinese wish ever to see the removal of the extra-territorial servitudes under which they labor at present, the first thing they must do is to ensure that Chinese Courts be prompt, just, and incorruptible, in order that foreigners may no longer fear to submit themselves to Chinese jurisdiction and may not have to display force before they can obtain the fulfilment of the law.

Electrical Industry in Japan

According to investigations made by the Japanese Department of Communications, the general condition of the electrical industry in Japan at the end of May, this year, was as follows:

Industry	Enterprises	Capital
Supply of Electricity	600	Y. 364,602,109
Electrical Railways	43	44,047,969
Both the foregoing Combined ...	48	326,706,691
Total	691	Y. 735,356,769

Compared with the corresponding period of last year, the number of enterprises increased by 42 and the capital by Y.69,970,107. The capacity to generate electricity for constant use has been estimated as follows:

	Already completed	*Not yet completed*
Water Power	420,508 kilowatts	314,516 kilowatts
Steam Power	120,095 ,,	160,475 ,,
Total...	1,015,594 kilowatts	

Compared with the corresponding period of last year, there has been an increase of 63,041 kilowatts for water power electricity and 88,199 kilowatts for steam power electricity, in all 151,240 kilowatts.

The following is a list of new enterprises during the month of May:

Newly established	8	283 kilowatts,	capital Y. 424,900
Work Commenced	2	67 ,,	,, ,, 86,000
Newly established Generating Plant	11	3,193 ,,	
Completed Establishment...	4	3,623 ,,	

Hydro-Electric Development in South China

By Professor Middleton Smith, m.sc.

During the last six years many hundreds of Chinese visitors have seen the machinery and experimental apparatus installed in the University of Hongkong There is one, comparatively small machine, which pleases them more than anything else. It is so delightfully simple and yet so mysterious. It is a water-wheel driving a dynamo.

Technically, the name of the plant is the Pelton wheel, directly coupled to a continuous current dynamo of 2.5 killowatts. The wheel is made up of a series of properly shaped buckets, rigidly fixed to a disc. On to the buckets a properly designed nozzle directs a stream of water. The wheel is enclosed, or the water would splash all over the place. But one of the sides of the enclosure is made of plate glass, so that the visitor can see the wheel at rest, and, until the churning of the water " comouflages " the wheel, he can see it in motion. He can see the Chinese mechanic turn on an ordinary valve; he can see the jet rush out of the nozzle; he can see the wheel rotating and gathering speed; and then he can see the bank of electric lamps, which is connected with the dynamo, gradually become dull red, glow brighter, until in about a minute they are giving out a brilliant light. We may be excused if we place the most efficient type of electric lamp on the board, because we want to demonstrate to the visitors, and to the students, what it is possible to do with a little stream of water which runs down a " nullah " at the side of the hydraulic laboratory.

When the " Hi Yahs " of the visitor have died down, we show him the water, after it has passed through the wheel, and we accept, as part of the routine, his amazement, of what a little water will produce a great deal of light. Then we take him outside of the laboratory and show him the pipe, winding its way like a great snake up the hill-side, and finally disappearing into a tank 175-ft. above the level of the Pelton wheel and we explain to him, carefully and with much patience, that in the early days of this little Colony the stream always trickled down the hill-side to the sea; but as it had to find its path, it left countless little stagnant pools behind it and in those pools mosquito carriers of the great eastern enemy, malaria, carried on their domestic arrangements and bred as only such small insects can breed under good conditions in the tropics. When he has got that one fact well into his head, we point out that the ways of the engineer not only provide a remedy for malaria—or rather prevent that pest of South China—but utilizes the energy of the water, which formerly ran to waste, in a practical manner. For electric light is something tangible. My Chinese friends will not deny, after they have seen the electric lamps and the Pelton wheel, that the water from the hill-side can generate that which makes night seem brilliant. They may doubt the truth of the Western notion that stagnant water is the real cause of malaria; and even if they did not, they would not consider at all favorably the idea of spending money on the extermination of the mosquito. But the beautiful electric light—that is quite another matter. That is something that really does interest them—public health does not.

The Question of Cost

The experienced instructor who shows the Chinese visitor this little hydro-electric plant waits for a few minutes after he has explained about the mosquitos and the water pipe and the storage reservoir (a small brick tank). Then he prepares his answer for the inevitable question. He knows that it will come, for he notices the deep attention of the visitor to the details of the plant. My Chinese friend has forgotten all about my humanitarian remarks on the matter of mosquitos; he has had something far more important in mind than the pestilental insect; he has been thinking of dollars. That is why he says "What does it cost?" and we know that what he really means is " and is there any money to be made out of it? " He expects (as the Parliamentarians put it) to receive " an answer in the affirmative " to the latter question, although he hesitates actually to make the crude enquiry.

His almost childish delight in the pretty mechanical and electrical plaything gives way to something else which is much more likely to make him remember that little Pelton wheel, with its dynamo, its electric lights, its pipes, its storage tank and the running water. For he sees that there is, indeed, money in it. The writer tells him that the whole outfit (before the war) would have cost less than $3,000. It will supply fifty lamps of 32 candle-power per lamp, and in South China the usual tariff inland is one dollar per month for a 32 candle-power lamp. Thus an expenditure of $3,000 should ensure a revenue of $600 per annum. There will be, of course, small expenses for (very occasional) repairs, etc., but making every allowance it is quite a good investment to instal such a plant.

Then comes the attempt, a little later to talk on the economics of engineering. " It costs much less if you do it, on a big scale " one says. "For example, if you will only discover a mountain stream near to a fairly big stream, and if there is enough water, you can build one Pelton wheel and dynamo large enough to supply thousands of lights at night. And during the day time it will supply electricity to run the rice mills, or do any of the thousand things which electricity will do. If you will only do the thing big enough you can actually fix the nitrogen of the atmosphere and obtain a most valuable chemical for your soil." And our Chinese visitors go away, very vague about mosquitos, malaria, gas-engines, steam power and the other things which we have shown them, but quite certain that there is money to be made out of hydro-electric plants in South China.

The Mountains and Torrents

The outstanding physical characteristic of South China is the river system, and the chief item of importance in that system is a mass of running water called the West River. It is impossible to give in detail the names and the characteristics of the many tributaries of the West River. Suffice it to say that the West River and most of its tributaries pass through a thoroughly mountainous region.

The West River, or Si Kiang, rises in the north-eastern part of the Yunnan province near a town called Kutsing. Tributaries join it which originate in several lakes on the plateau of Yunnan. Where the boundaries of the provinces of Yunnan, Kweichow, and Kwangsi meet, it is called Pahtah Ho; but it passes on right through the Kwangsi province to Wuchow, when it is called the Si Kiang. It passes next through the thickly populated province of Kwangtung and runs into the China Sea through several channels between and around Hongkong and Macao.

This river drains an area of 339,000 square kilometers and receive a large number of tributaries. The length of the river is 1,790 kilometers (over 1,100 miles), of which 485 kilometers fall within the province of Yunnan, 370 kilometers along the border line; 620 kilometers within Kwangsi and 315 kilometers within Kwangtung. Thus it will be seen that what the river Nile is to Egypt, or the Amazon to Brazil, this Si Kiang is to South China.

The Volume of Water

Huge mountains divide the drainage basin of the river system into numerous valleys. Away to the north the Yunnan table-land separates the West River basin from that of the rivers in Burmah and Tonkin. To the south and Juling range makes a barrier to the coast. The mountains are, as a general rule, barren, and even now reckless acts of the natives increase the deforestation. Below Wuchow the mountains are not so steep as further up the river, but between Wuchow and the sea there are some narrow gorges through which the river winds. The Sin Siang Gorge, for example, is anything about 1,000-ft. wide at its narrowest part, and extends for a length of over three miles.

The current of the river is naturally strong at the narrow places. Silt and mud are stirred up and are carried along by the water to be deposited again when the velocity of the stream decreases. Thus it has been estimated—it is a reliable estimate based on measurements as accurate as can be expected—that 200,000 tons of silt were deposited between two stations, Chutpolin and Poishui in 24 hours.

The volume of water passing these stations was the same as that passing Wuchow. On the 15th September, 1915, it was taken by order of the Conservancy Board of Kwangtung and was found to be 8,400 cubic meters per second. That is to say that roughly about 8,400 tons of water passed Wuchow per second, or 30,000,000 tons per hour. If that volume of water had been dropped only one foot vertically it was capable of developing over 28,000 horse-power. If it had dropped 100-ft. vertically, the horse-power would have been 2,800,000.

It is, of course, quite impossible to estimate what horse-power could be obtained from the river system of South China. Only accurate measurements of heights, as well as volumes, can give us the needed data, but records and tables show that there is a very great variation in the volume of water passing at any given place. Thus, in the readings taken in connection with the Kwangtung Board of Conservancy Works (see the admirable Report of 1915) the minimum volume (at Wuchow) was for 1910, only 900 cubic meters per second, while the maximum for 1915 (the year of the floods) was 5,900 cubic meters per second. But, of course, arrangements are made in any hydro-electric scheme to meet such fluctuations. And after all, all countries have their wet and their dry periods.

The Lesson of Japan

The reason why the writer has gone into this matter rather fully is, not only because of the "Hi Yahs" of the Chinese visitors who see the little hydro-electric plant at the University of Hongkong; not only because he is convinced that "there is money in it" if any source of the energy of the rushing waters of the rivers of South China can be utilized; but because he has toured Japan; he has inspected the enormous plants at the Niagara Falls; he knows of the extraordinary developments of industry in India brought about by hydro-electric schemes; and he has seen the transformation of a quiet country district into a hive of industry, due entirely to the presence of "white coal."

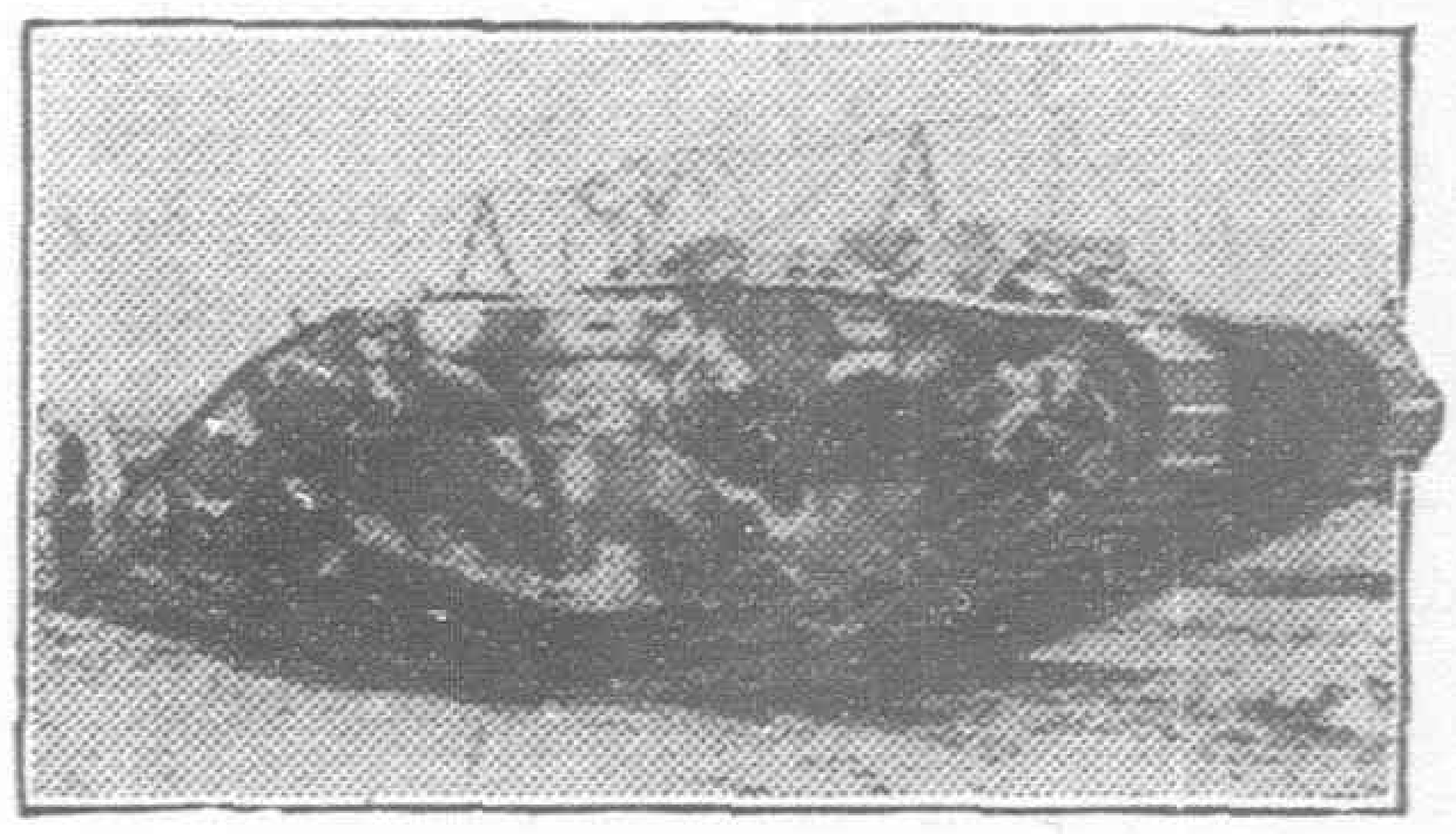
What has happened in Japan can take place in South China. It has happened rapidly in that Far Eastern country which employed the foreign expert when it made up its mind that science could develop its natural resources. It is, of course, a mountainous country; but you will find that every little village near any little stream of water in Japan utilizes the good gift of nature.

A careful engineer estimated that in 1911, the water horse-power utilized in the United States of America was 4,870,000 and at the end of 1915 (in four years) it was 6,500,000. But he also came to the conclusion that 60,000,000 water horse-power was available in the great Republic of the United States of America. Let us admit that some of it was too remote from a market to be of much use, but let us also remember that modern manufacturers are attracted by cheap power.

What will the great Republic of China do with the enormous water-power available? For, despite the cheap coolie labour, a transformation from muscular to mechanical power is taking place in China. Will it be electrical power from coal (as now exists in Shanghai) or power from oil or power from the rushing rivers and the waterfalls?

And what of that wonderful belt of the country within the tropics? Nature has lavished her gifts on South China and man has built up commerce and a great seaport so that there may be mutual benefit between South China and the rest of the world. If we think of the astounding changes on the Western shores of the Pacific within the memory of men now living, shall we "pooh-pooh" the idea of a transformation in our own life time in South China? If you "pooh-pooh" you do not know the Cantonese. Politically they may appear, at times, hopeless; but industrially they are wonderful. At present they are wasting their energy; their muscles are being used instead of steam or water-power; their brains are on some problem of a few dollars when if they would work at the development of the natural resources of their provinces they could be thinking in millions of dollars. South China needs a Cecil Rhodes and it will become one of the most wealthy ports of the earth. We, who have traced out the astounding growth of Hongkong, see in the little Colony a symbol of what Anglo-Saxons will do for South China, if only they are given the chance. They will benefit; but their gain will be infinitisimal beside the gain of the Chinese. Somebody once said that the British accepted from the land of China a barren rock called Hongkong and that they made it a mountain of gold from which the Chinese take countless sacks each year into China. It is a true simile. And now Anglo-Saxon engineers want to transform the rushing waters of South China into streams of gold which will fertilize the country? May they soon begin.

The Knight in the "Tank" at Cambrai



It is an interesting fact that the Allied armies are depending very largely upon the efficiency and reliability of the well-known Knight engine, on the field of battle. If we trace the history of the European War, a war which has depended very largely on petrol, we find that the Knight engine has been in the thick of it from the very beginning.

When the British went over the top to Cambrai, General Byng practically replaced artillery by the "Tank." And the British tank is Knight-"motored," but only after the most crucial tests for dependability ever placed upon an engine, had been given to it by the British Government.

The more recently supplied motor transports or lorries furnished the British Government all are Knight-"motored." It was the Knight-"motored" buses and transports that helped to save Paris. For when the famous "taxicab army" went forth from the French capital, the bulk of them were Panhard-Knights. And everyone knows of the fame of the Daimler-Knight bus at the front.

It was late in 1915 when came the supreme achievement of the Knight motor. Then it was that the British tanks were designed, and for them a Knight motor was unanimously selected by the British staff. The tank is a veritable moving fort weighing many tons, and possessed of tremendous strength and power. Its success and the lives of its crew depend first and last upon the power plant, for should this fail, in even the slightest degree, the tank is doomed.

Needless to say, the British knew this; and when it came to deciding upon the engines for the tanks, the Knight was specified, and two 6-cylinder sleeve valve "motors" were installed in each tank as the source of power.

That without question is the greatest compliment ever paid the sleeve-valve motor, and is the crowning achievement of a long list of notable triumphs which include, among others, the breaking of all the world's records, the acknowledgment in European Motoring Circles that the Knight engine is supreme, the establishment of new British and American records, their adoption by the London Omnibus Company and the Fifth Avenue Bus Company of New York, not to mention many others.

Every Willys-Knight Motor Car is Knight-"motored." Equally staunch is every other characteristic of this famous car.

We draw attention to the advertisement of the Australian Oxygen Company, of Melbourne, appearing on page 78 of this issue. This Company has large and modern works for the manufacture of the requirements of engineers and others employing large quantities of industrial gases. To the original equipment has been added a complete plant for the manufacture of carbonic anhydride, a gas chiefly used as a refrigerant, by the most modern method. The plant has taken several years to erect and now that it is running the firm offers this gas at a quality and price hitherto unapproachable in this part of the world. The Company also trades largely in oxygen, hydrogen, laughing gas, and nitrogen, and also in all accessories connected with the craft of oxy-acetylene welding. The Company has also an equipment for the manufacture of blow-pipes and such-like metal work, and have for many years past been supplying high quality welding and cutting blow-pipes to the trade.

"Dry Fords" Instead of Bridges

Chinese in certain sections of the country are at last beginning to show some appreciation of the value of good roads. In various places short roads are being built, and in others there is talk of substantially lengthy highways. In the vicinity of Peking the officials who possess motor cars have managed to influence the building of about 40 miles of roadway, and the floods of last year inspired the charitably inclined Rockefeller Institute to provide a large sum to support the refugees as workers on a road from the Capital to Tungchow. Chinese residents of the district now talk of extending this road to Tientsin, a total distance of some eighty miles.

If some measure is eventually taken to disband the riff-raff armies at present controlled by various Military Governors the pseudo-soldiers will no doubt be put to work on some system of roadways. Should such a scheme be considered it is well for the Government to give the closest attention to any means calculated to avoid the costly bridging of the wide so-called water courses which are for the greater part of the year dry beds of sand. Throughout the great plain there are many such. When heavy rains fall they serve to carry off the flood waters, but once this is done very little water, if any, is seen in them. "Sand river" is the term used by the Chinese to describe this type of drainage, and there is a plethora of "Sha hos" in the country. Road makers will find them a problem, if bridging is contemplated, first because bridges sufficiently long to clear flood waters will be extremely costly, and, secondly, because in dry seasons bridges would not be necessary if some other cheaper provision could be made to prevent carts and cars being stuck in the sand. And providing a bed for traffic can be laid to serve this purpose the same thing can be used in rainy times, for the flood waters are invariably wider than they are deep.

In this connection we wish to draw the attention of all interested in the construction of roadways in this country, with its peculiar and common sand rivers, to what is known in the Upper New England District of Australia as the 'Wikner' Dry Ford. The photograph accompanying this article represents the ford, and a glance at it should convince everyone familiar with conditions in China of its unique suitability to this country.

Mr. F. V. Wikner, then Shire Engineer at Glen Innes, and now of the Blue Mountains Shire, Lawson, is the originator of the idea; and he has put it into practical use, with absolute success in several of the fast running streams of the former district.

Such a ford is designed to take the place of a low-level timber bridge, and the advantages claimed are:—

(1) That it can be built for a very considerable sum less than the cost of a low-level timber structure.
(2) That first cost is practically the only cost.
(3) That the roadway on the ford being level for its full length (the slight fall against stream being negligible) the index posts at each end registering the exact height of flood waters, it is absolutely safe to traffic, irrespective of the turgidity of the stream, up to the limit of each distinct vehicle's "clearance"; in short the roadway of the ford cannot be "scoured."
(4) That no danger to structure need be apprehended from floating debris during flood; the guard-chain can be released at either end, and left free until the flood subsides.
(5) That no maintenance is required, beyond occasional painting of index posts—a very small item of cost.

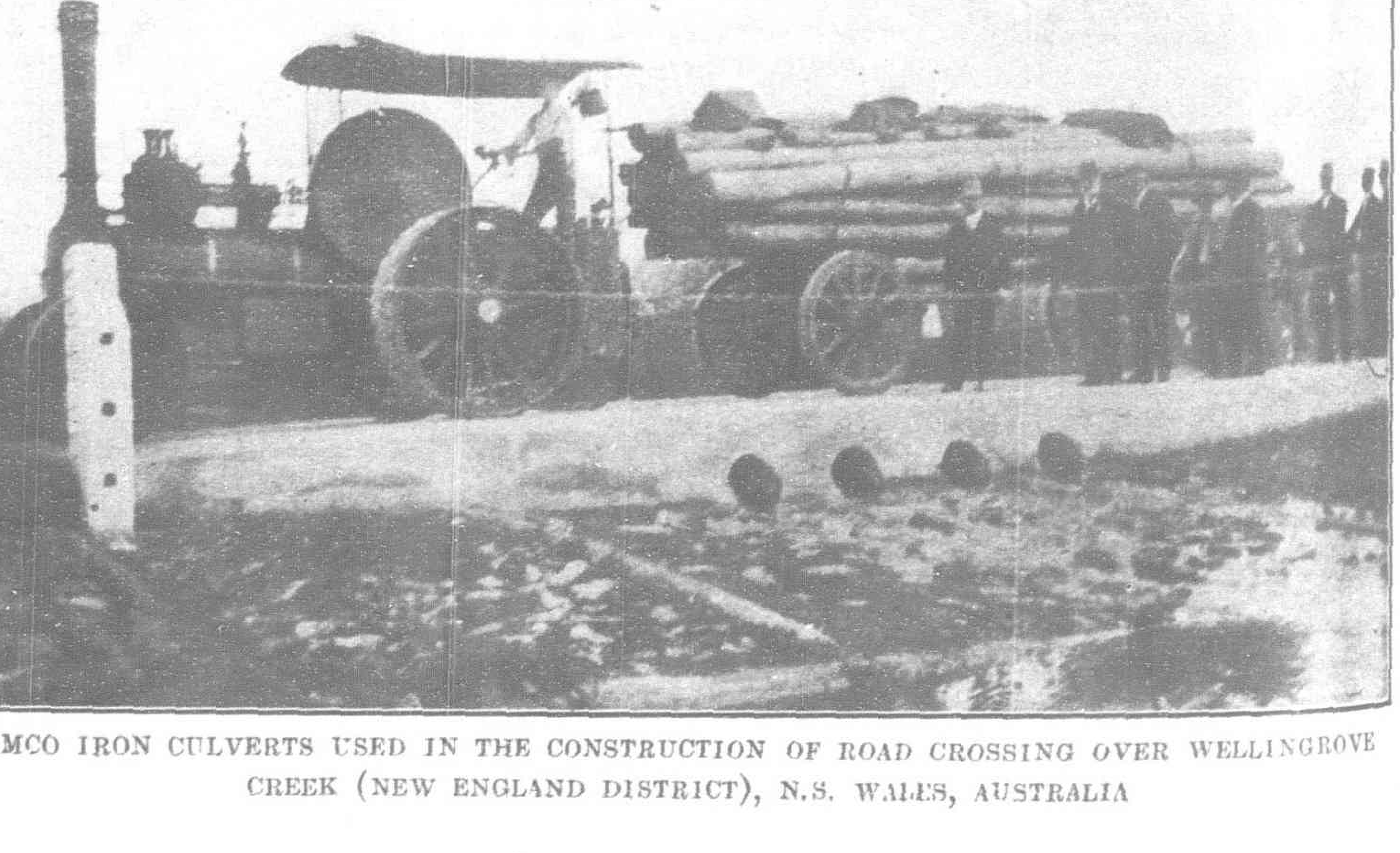
There is no hard and fast rule about the method of construction; as work of a permanent nature is what is alway aimed at, it is recommended that reinforced concrete be used in construction to the full length, width and height. What is claimed as being essential to its success is that the pipes be given a fall with the stream as indicated later on, and the finished roadway the same fall, inversely. Nor does it demand that a guard chain on the lower side is essential; on some streams this may be eliminated, while on others a hand-rail designed to trip with the stream when in flood may be found an advantage.

In the ford shown on the accompanying photograph advantage was taken of the timber sill which was in existence on the down stream side of what is known as a causeway. This sill, in several scarfed lengths, was found to be absolutely sound, as well as the timber framing of the "apron;" and as it had stood the test of memorable floods during the preceding 20 years or so, was considered good enough to adopt as a foundation. On this sill, after being prepared, the down-stream ends of the pipes were laid, and the whole enclosed in reinforced concrete, thus forming a concrete sill; after which a suitable bed was prepared to receive the balance of the pipes, and the work proceeded with as per plan. In this structure was incorporated "Armco" galvanised corrugated iron pipes, manufactured by the California Corrugated Culvert Company, which were found to act splendidly in this and other similar constructions. The matter of friction through the corrugations in a pipe line of such short length is a negligible quantity.

The ford under review cost one-tenth of the estimated cost of a low-level timber beam bridge. Such a structure is, therefore, specially applicable to streams which cross country roads where the through traffic and local requirements are not of sufficient importance to demand that a structure be erected at such a level, so as to be negotiable at all times.

The procedure in selecting a site is much the same as in a bridge proposition. It is, of course, essential to secure suitable foundations. Take the necessary levels, showing longitudinal and cross sections. According to local conditions, and after estimating the pressure of water, decide on the height to which the level of the finished roadway of the ford will be taken, and the number and diameter of the pipes required adequately to relieve the pressure of the stream; then proceed to set pipes in position on a suitably prepared bed, giving them a fall *with the stream* of 1 in 88, which is sufficient always to keep them flushed clean; then proceed to enclose them in reinforced concrete, carrying on up to the height, width and length decided on, but giving the finished surface an inverse fall of 1 in 88, *against* the stream. This will cause a certain "brake" to the stream, up to a moderate height, when flood waters are passing over, and create what is known as "dead" water, on the ford, a decided advantage to timid travelers. It has also the advantage of hastening to dry the roadway when flood waters are falling, as there is very considerable suction through the pipes.

The ford described is dry in normal seasons, or when small "freshets" occur, up to the level of the upstream side of construction, the stream being conveyed through pipes under the surface of roadway; hence the title "Dry Ford."



ARMCO IRON CULVERTS USED IN THE CONSTRUCTION OF ROAD CROSSING OVER WELLINGROVE CREEK (NEW ENGLAND DISTRICT), N.S. WALES, AUSTRALIA

Revision of Japan's Freight Tariff

Phenomenal progress has recently been made in the transportation of freight in Japan. In and about the twenty-third year of Meiji (28 years ago), when the Constitution was promulgated, passenger traffic constituted the main feature of the railway service, freight traffic being but a secondary consideration. The annual receipts were then not more than about Yen 8,000,000 (those of the Government and private railways put together), of which the passenger receipts amounted to Yen 5,200,000, and the freight receipts Yen 1,700,000, the ratio of the former to the latter being 3 against 1. Thenceforward freight traffic grew rapidly in volume, and in the thirty-first year of Meiji (20 years ago), the ratio was 2 against 1, and in the fortieth year it was 4 against 3. In the fourth year of Taisho (this is the seventh year), the freight receipts rose to the level of the passenger receipts, and from that year onward the freight receipts have gradually surpassed the passenger receipts, the former being put at Yen 110,000,000 last year.

The management of the railway service in the present circumstances has necessitated 20 per cent. increase in the freight rates, but as the present low rate tariff is still to be applied to such articles as are considered indispensable to the daily life of the nation, it is expected that the increase in the receipts due to the advance in the rates will be about Yen 15,000,000. The decision to make an advance at a time when a rise in the price of commodities in general is menacing the life of the masses may possibly create an agitation, but the present rates are very low when compared with those of leading foreign countries. The per ton per mile rate in England, Germany, and France, in 1916, was 4.5, 2.7, and 2.6 sen respectively, while in Japan it was 1.65 sen. In America, however, it was then 1.43 sen, but about 40 per cent. advance has been effected by the revisions made twice since the outbreak of the war, the result being a little above 2 sen per ton per mile. As the new per ton per mile rate in Japan will be slightly less than 2 sen, it is lower than that in America.

The increase in the freight traffic on the Japanese railways, as indicated above, amounts to 600 per cent. in the receipts and about 800 per cent. in the ton mileage in thirty years, and the authorities are endeavouring to facilitate the transportation so that they may realize in future a better result than that hitherto obtained.

The freight tariff will be revised on September 1st, roughly as follows:—

(1) Twenty per cent. increase in the rail and steamer rates. The present general rates on articles of the 1st, 2nd, 3rd, high and special class will be raised by 20 per cent. However, the undermentioned articles, which are necessaries of daily life, will, for the time being, be carried, when consigned in carload lots, at the present general rates or at the special rates now in effect for these articles:—Rice, barley, wheat, rye, salt, vegetables, *miso*, *shoyu*, manure, firewood, charcoal, salted or dried fish, fresh fish, roll paper for newspapers, state text books.

(2) The special San-yo rates to be abolished. At the time of the railway nationalization, circumstances did not permit of unifying the rates, and the following four different rates were made to be applied to different localities, viz., Tokaido rates, applicable on the Tokaido, Kwansai, Hokuriku and San-in lines; north-eastern rates, applicable on the North-eastern, Shin-etsu, Central and Hokkaido lines; San-yo rates; and Kyushu rates.

In the first year of Taisho, an attempt was made to unify these rates, but the Imperial Government Railways were still obliged to retain two different rates, that is, the general rates and special San-yo rates applicable on the section between Osaka and Shimonoseki, and on Uno, Kure and Sanuki lines. It is already six years since the last revision in the first year of Taisho, and time has matured for the unification of the rates, hence the abolition of the special San-yo rates and the application of uniform rates on all the Government lines.

(3) Ton consignment to be abolished and the kinds of consignments to be altered. In the present tariff there are five kinds of consignments both on rail and steamers, that is, *kin*, ton, carload, express, and double rate, but in the tariff, the ton consignment will be abolished, and the fast freight service will include express and double rate consignment, and under the ordinary freight service will come piece (the present *kin* consignment), carload and special consignment in the case of rail transportation, and piece, ton (corresponding to carload consignment on rail) and special consignment in case of steamer transportation. The ton consignment was deemed necessary to be established when trade was not carried out in large lots, but as economic activities have recently made remarkable progress, and the units of the transactions have become much larger, it is expected that the abolition of the ton consignment will not inconvenience the trading public greatly. Besides, the railways incur not a little loss on account of the diminution of car efficiency due to the said consignment. In the ton consignment on the connecting steamers, the minimum rate will be for seven tons per consignment in order to keep a balance with the carload consignment on rail. The newly established special consignment is applicable only to articles of the special class (excepting articles of item 2) and the rates therefor are computed according to the number of the head, vehicles, pieces, etc., consigned.

(4) Fractions of one sen to be disregarded. In the present tariff fractions of one sen are counted as one sen, but in the new method of calculation they will be cut off, the minimum rate of five sen per consignment remaining as at present.

(5) The extra charges for lengthy goods applicable only on the Hokkaido lines, to be abolished. The extra charges which are made for goods of great length are now a little lower on the Hokkaido lines than on the other lines, but the general special rates will be applied also on the Hokkaido lines, the said extra charges being abolished for the same reason as for the abolition of the special San-yo rates.

(6) Rates between Moji and Fusan to be altered. The rates between Moji and Fusan have been the same as those between Shimonoseki and Fusan, but in the new tariff, rates will be computed separately for the passage between Moji and Shimonoseki and between Shimonoseki and Fusan, in order to charge the goods according to the actual route covered by the transportation of the goods between points in Kyushu and Chosen.

(7) Storage charges to be partly altered. Storage charges for bicycles, perambulators, motor-cycles, and also for merchants' hand wagons and live stock are to be partly altered.

(8) Charges to be made in case application for transportation is cancelled, etc., officially announced. In order to make known to the public in general the regulations governing the charges to be made in case application for transportation of goods is cancelled before the goods are despatched, which have hitherto been in practice, these regulations have been officially announced. The conversion rate between *kwan* and *momme*, and *kin* and ton, and general rules applicable to the computation of traffic miles have also been made public officially.

Car demurrage, storage charges, commission for C.O.D. service, etc., and additional charges for the transportation of articles of value and live stock, as well as the classification of goods, will, on the whole, remain as they are.

Japan is now urging the Chinese Government to open to trade the cities of Kweihwating, Taonanfu, and Hulutao, as agreed in the Treaty effected as a result of the 21 "demands." The Chinese Government has also been pressed effectively to open Jehol, Chaoyangfu, Linshi, Kailu and Chinchow.

Plans for Gold Currency in China

Popular Clamor Greets a Currency Reform Scheme Promulgated by Presidential Mandate

China has done quite a lot of muddling in her time with her currency with the result that unadulterated chaos obtains throughout the length and breadth of the country. Presumably with the desire to make things better rather than worse the Minister of Finance, Mr. Tsao Ju-lin, astonished beholders on August 10 by petitioning the President to promulgate rules and regulations for the establishment of organs to effect reform of the currency on an alleged gold basis. The President solemnly enough carried out the behest of the Minister, but that he was half-hearted about it was disclosed when the report of the conference at which the proposal was put to him was published. He frankly confessed that he could not see the advantage of the scheme, but since his advisers professed resolute confidence in it he expressed himself ready to give his concurrence by stamping it with his seal, and issuing the necessary Mandate. This he duly carried out, and when the Mandate was put before the world on August 11 a hornet's nest was stirred up which for violence and activity has scarcely been equalled since the good old days of the "battle of concessions." Foreign bankers and traders were virtually prostrated—certainly they had to gasp for breath—and those Chinese who aver that the members of the present government have nothing more in mind than to sell the country out and get what they can for their personal banking accounts disgustingly prognosticated that the very end had at last arrived. As the "Peking Leader," a paper edited and owned by Chinese put it, "A feeling of hopelessness and disgust" seized everyone wishing well to China.

The popular outcry was not the result of any particular consideration of the merits of the scheme. It was due to the motives believed to be inspiring the Finance Minister to launch it at this time upon, we were going to say, an unsuspecting world. That would be incorrect, for both Chinese and foreigners for some time had been watching with great interest to see what would become of a proposal they knew to be afoot to raise a large loan in Japanese bank notes for "currency reform," and under what camouflage it would be made public.

The ink on the Mandate was scarcely dry before the alarm was echoing throughout the country, and in fact the world, that the Minister of Finance was fathering a proposal to issue gold notes and inaugurate a Currency Bureau simply and solely to give him an excuse to raise a loan of Yen 80,000,000 to put gold notes on the market to the extent of some Yen 240,000,000.

The hue and cry was a great one, and it was only minimised, so far as the outside world was concerned, by the activities of a zealous censor. His blue pencil ruthlessly carved verbal slices out of cables addressed to the chief newspapers of the world, but it did not stop castigation by the papers in China. The foreign Banks interested in the Currency Loan contracted in 1911, but not consummated, at once began to move, and political opponents of the Minister augmented the clamor by making vicious capital out of the Mandate. They charged the Government with contracting to circulate Japanese yen notes in China in order to facilitate Japanese trade and give Japan an irrevocable hold on China's finances and trade, and with a number of other "crimes."

So hot were the allegations, so insistent the condemnation that within seven days it was given out that the regulations were not at once to be put into force. The Japanese Legation at Peking strenuously denied any knowledge of the alleged loan of eighty million yen worth of notes and the Minister of Finance personally declared to the representatives of at least two foreign Legations that no loan was contemplated.

As it is of course obvious to the most ignorant that no such measure as that contemplated in the Mandate can be effected without a substantial loan, China having no gold of any sort, it has to be taken for granted that the plans of the Minister were changed solely as a result of the popular outcry. In his memorial he specifically states that depreciated bank notes in Peking will be cashed "as soon as the currency reform loan is concluded," which seems to be a little inconsistent, to say the least, with the denials made after the promulgation of the Mandate giving effect to his proposals.

As the Presidential Mandate makes the proposals law and, therefore, gives them a position of first magnitude we append a translation of the documents for the sake of record:

The Petition of the Finance Minister

In his petition to the President, Tsao Ju-lin, Minister of Finance, states that in February, 1914, the Government promulgated the National Coinage Law with the object of unifying the silver currencies as a preliminary step to the ultimate adoption of the gold standard. "The scheme outlined by that Law has been carried out and is successful," states the Finance Minister, "and we should promptly advance another step in order to achieve complete success." The reasons for the necessity of adopting a gold standard are given by the Minister as follow:

1.—China's foreign indebtedness and indemnity (principal and interest), amounting to one-third of her total expenditure as stated in the annual national budget, are all in gold currency. If silver falls in value we will suffer great loss on exchange. If silver rises in value it will disturb the appropriations of the budget, which is also detrimental to the planning of financial programs. Since the outbreak of the European war China has been making enormous foreign loans in gold with the result that we suffer a great deal on exchange at the present moment, and in the probable event of gold returning to the normal value, China will again pay dearly for what she has borrowed, thus suffering huge double losses. The present is a rare opportunity to store gold in foreign countries for future use.

2.—China's international trade is growing in volume, but the business men in addition to ordinary business calculations have to take into consideration and face the risk of exchange fluctuations between silver and gold, a serious hindrance to normal development of commerce felt by both Chinese and foreign traders. In consequence of this it is difficult to develop China's industries. The invisible loss which China suffers on account of this handicap is incalculable. So it is necessary to adopt a gold standard.

3.—The most advanced nations in the world use gold. Even India and Mexico do so. China should do so, too.

The Transitional Program

China does not have much gold. It is difficult to mint gold coins at once. It is also difficult to fix the ratio between gold and silver owing to abnormal conditions created by the European war. So it is necessary to have a transitional program. Liang Chi-chao's program is (1) strictly to enforce the National Coinage Law of 1914 to secure unification of silver currencies. (2) To clear up paper currency entanglements to secure a sound note issue. Then to issue gold notes as a preliminary step to the adoption of the gold standard. Liang also approached the Quadruple Group Banks for a Currency Loan to carry out his program. The Group represented by the Yokohama Bank advanced Y.10,000,000 during Liang's tenure as Finance Minister, another Y.10,000,000 during Wang Ko-ming's time, and another Y.10,000,000 during my time.

After taking up office, I, Tsao Ju-ling, asked members of the Ministry to study the foreign and Chinese currency systems and doctrines, the customary practice of traders in the various provinces, and the general financial tendencies of China and foreign countries. The conclusion we arrived at is that three steps are suitable to present needs and should be carried out:

1.—Unify silver currencies.

2.—Adjust the note issues.

3.—Issue gold notes.

The gold note issue as preliminary to a gold standard was suggested by Dr. Vissering in 1912, and is similar to Liang

Chi-chao's idea. We adopt their ideas and fix the new unit to be called the Chin-yuan (gold yuan) containing 0.752318 gram of pure gold (Kuping) 2.01688 fen.

How Gold Notes will be Circulated

The gold note is to be issued by a bank designed by the Government. The Government will give a special permit to the bank to raise the capital for the establishment of a trading company to do international business so to help the circulation of gold notes. The communication offices (railways, telegraphs, etc.) will first accept and use gold notes. The use will then be extended to public funds and salaries to officials. When the use is greatly *developed, and when the market* ratio between silver and gold agrees with the intrinsic value of the gold and silver coins minted, then the Government will announce the adoption of the gold standard, and the gold note or coin will be used in place of the silver dollar, which will either be recalled or used as a token coin of the gold yuan. The subsidiary coins provided in the National Coinage Law will also be used as tokens of the gold currency. In this way, the people will not be disturbed and the gold standard will be established.

Please fix the above program as the general policy of currency reform. Since the policy will thus be fixed we should gradually work to attain our object. The Currency Department of the Ministry is organised on a small scale. So it is necessary to establish a Currency Bureau directly under the Premier to show its high standing with a Director-General (to be taken *concurrently* by the Minister of Finance) to secure connection with the financial administration.

We should engage experienced experts as advisers to the Bureau for guidance in the work. We hope to complete our task in ten years. The memorandum on currency reform, the gold note regulations, the regulations governing the official system of Currency Bureau are ready for promulgation. The regulations for the China Trading Company are being examined by the Ministry of Agriculture and Commerce and will be submitted soon afterwards.

Presidential Mandate Legalising Gold Currency

In conformity with the above Petition the President, on August 10, issued a Mandate giving effect to the plans of the Minister, promulgating the regulations governing the issue of gold *notes and the regulations for the establishment of a* Currency Bureau, as follow :

Tsao Ju-lin, concurrently acting Minister of Finance, in a memorandum states that as the currency of a country is an important matter the Regulations governing the National Currency System promulgated in the 3rd year of the Republic should be carried out in order to unify the silver currency, issue notes in gold currency and organize organs for their circulation in the country. The said acting Minister also requests that a Currency Bureau be established to take charge of the matter and bear the responsibility. *He has drafted the Regulations Rules governing the issue* of gold currency notes and the organization of the Currency Bureau and submitted the same for consideration and promulgation. The establishment of a uniform system of currency is an important measure in the administration of a country and is closely connected with the livelihood of the people. *In* the 3rd year of the Republic, regulations governing the National Currency System were promulgated with a view to unify the silver currency of the country as a preparatory measure to the adoption of gold standard. Since the enforcement of the said Regulations, satisfactory results have been obtained so that efforts should be made in order that the project may be crowned with success. As the Regulations governing the Issuance of the Gold Currency Notes and the Rules governing the Organization of the Currency Bureau have already been promulgated by mandates, the said Ministry is hereby ordered to carry out the measures as suggested in the said memorandum.

Gold Currency Notes Regulations

Article 1.—With a view to facilitating international trade and preparing for the adoption of a currency system with a gold basis the bank or banks appointed by the Currency Bureau shall be allowed to issue gold currency notes.

Article 2.—The unit of the gold currency shall be one gold dollar which shall contain 0.752.318 Kungfun of pure gold, that is, 2.01688 candareen of Kuping tael.

One tenth part of a good dollar shall be called a "*cho*," one hundredth a "*fun*," one thousandth a "*li*," etc.

Article 3.—The denominations of the gold currency notes shall be : one dollar, five dollars, ten dollars, twenty dollars, fifty dollars and one hundred dollars.

The Government may order the bank or banks appointed by the Bureau to issue gold currency notes of small denominations, such as five-cho (half-a dollar) two-cho (one-fifth of a dollar) and one-cho (one-tenth of a dollar), and the Government Mint may be ordered to mint copper coins of one " fun " *denomination.*

Article 4.—Before the coinage of such gold dollars the holder of the gold currency notes may remit the money to other cities in this country or to foreign countries through the specified banks and after the coinage of such gold dollars, the holder of such gold currency notes may exchange them for gold coins as well as remit them to any city in the country or to any foreign country.

The gold currency notes may be exchanged at the specified banks for foreign gold coins or string gold. All ornaments made of pure gold shall be considered equivalent to sterling gold and they shall be valued according to the quantity of pure gold they contain.

Article 5.—The proportionate value of the gold currency notes and the national currency now in circulation will necessarily not always be the same. But it shall be made known to the public by notifications issued by the specified banks from time to time, and gold currency notes and current silver coins in circulation may be exchanged at the said banks at the notified value.

Article 6.—The specified banks shall have an adequate gold reserve against the amount of notes issued. This gold reserve shall either be in *our national gold dollars, or gold bullion, or foreign gold coins* deposited with the exchange banks in both Chinese and foreign commercial ports. The public shall be notified by the specified banks once every ten days about the amount of the gold reserve and the places where this reserve is deposited.

This gold reserve shall be subject to the inspection of the special delegates of the Currency Bureau at any time.

Article 7.—The gold currency notes may be used in public and private dealings at the proportionate value as notified from time to time by the specified banks.

The use of the gold currency notes shall not be restricted.

Article 8.—The specified banks may deposit and carry on other forms of business with the gold currency notes.

Article 9.—These Regulations shall be enforced from the date of *promulgation.*

Rules for the Organisation of the Currency Bureau

Article 1.—The Currency Bureau shall be under the direct control of the Premier and take charge of the following affairs :

(1) Those in connection with currency.
(2) Those in connection with the issue of notes.
(3) Other matters in connection with currency.

Article 2.—The following officers shall be appointed to the Currency Bureau :—

One Director-General : this post shall be held by the Minister of Finance concurrently.

One Governor : to be specially appointed.

One adviser : to be engaged.

An unlimited number of nonorary advisers : to be engaged.

Article 3.—In the Currency Bureau, departments shall be established and members appointed to manage the affairs of the respective departments. But before the establishment of such departments, an Investigation Committee shall be appointed with a certain number of members, which shall be decided upon by order of the Bureau.

Article 4.—For copying documents and the management of miscellaneous affairs clerks shall be employed in the said Bureau.

Article 5.—All the Mints, Printing Offices, Paper Factories, and the Superintendents of the Banks under the control of the Ministry of Finance shall be under the supervision and direction of the Currency Bureau.

Article 6.—The Currency Bureau may issue orders independently or, when necessary, for the issuance of Cabinet orders, or issue jointly with the Ministry of Finance.

Article 7.—The Currency Bureau shall be established for a period of ten years.

Article 8.—The Regulations governing management of affairs in the Currency Bureau shall be drafted separately and enforced in due course.

Article 9.—The Rules shall be enforced from the date of promulgation.

A History of China's Currency

The Finance Minister attached to his petition a history of China's currency. He pointed out that in order to get an intelligent understanding of currency conditions in China and to frame a sound scheme for currency reform, it was necessary to examine the history of China's currency, and this has been done as follows :—

I. *Brass Cash.*—Brass cash was first minted during the Chou dynasty. The minting was continued by each and all of the succeeding dynasties, each new emperor minting new cash bearing his own title. The cash is round in form with a square hole in the centre, the diameter and weight differing. Cash during the second year of Shun-chih, an emperor of the Tsing dynasty, weighs as much as 2 mace and 2 candareens. Light ones minted during Kuang-Hsü's reign weighed only 6 candareens, being one-cash pieces. Big cash were also minted (during the Taiping rebellion) called 5-cash and 10-cash pieces. Since the introduction of the copper coin, brass cash has gradually decreased because of illicit melting, and no more is now minted. Recently brass rose in value, and enormous amounts of cash are being melted. In treaty ports, and big cities with good communications facilities, brass cash is becoming rarer every day, though a certain amount of cash may be found in out-of-the-way interior places. The exact amount of brass cash now extant cannot be ascertained because figures showing the amount of cash minted by various Emperors are not available.

II. *The Copper Coin.*—The minting of copper coin (ten-cash pieces) began in Kwangtung in the 26th year of Kuang-Hsü (1900), the year of the Boxer trouble. An Imperial edict was issued in 1901 ordering the coastal and river provinces to copy Kwangtung's example for the reason that cash was becoming scarce and insufficient for circulation. Then began an era in which the provinces vied with one another, and flooded the market with an abnormally large output of copper coin. The copper coin was originally intended for use as a substitute for cash. But the basic trouble is that there is no legal ratio between cash and dollar and cash and tael, the exchange rate being controlled by factors of supply and demand between copper and silver. Therefore, the ratio between the copper coin and the dollar and tael is also subjected to erratic fluctuation according to supply and demand of either of the three currencies. The copper coin is not a token coin. Moreover, the amount of pure copper contained in the copper coin is different from the amount contained in ten brass cash, although it is intended to represent ten cash. Because of these differences in weight and fineness, different exchange rates arise between the brass cash and the copper coin. So it happens that each of these three currencies—silver, copper coin and brass cash—goes its own way and has no connection with the other in the ratio of value. There is no system between these three currencies which could come under one fixed ruling.

At first the Government issued regulations ordering that 100 copper coins should be equal to one dollar: and one copper cash should represent 10 brass cash, showing that the Tsing Government intended to use the copper coin as a token coin of the silver dollar. But the Government did not understand the underlying principles governing the standard coin and the token coin and did not take steps to maintain the legal ratio by ordering state banks to exchange cash for copper coin or *vice versa* at fixed legal rates. The Government did not put restrictions on the amount to be used and the amount to be minted. So confusion set in. Copper coins were minted by as many as seventeen mints simultaneously—at Tientsin, Mukden, Kirin, Honan, Shantung, Nanking, Soochow, Tsingkiangpu, Anhui, Hupeh, Hunan, Kiangsi, Chekiang, Fukien, Kwangtung, Szechuan and Yunnan. During the Republic only eight mints were retained, viz., Tientsin, Mukden, Nanking, Hupeh, Hunan, Szechuan, Kwangtung, Yunnan. The Chungking mint also minted 200-cash pieces, 100-cash pieces, 50-cash pieces, 20-cash pieces and 5-cash pieces in copper coin. The 10-cash coin is universally minted by all mints. At present about 130 coppers are worth one dollar. The total amount of coppers minted by all the mints from the beginning to December, 1917, is as follows:—

10-cash pieces	31,682,102,306
20-cash pieces	386,292,308
50-cash pieces	300,805,522
100-cash pieces	15,699,227
200-cash pieces	3,064,862
1-cash pieces	160,487,661
2-cash pieces	28,718,641
5-cash pieces	37,942,509

III. *The Silver Tael.*—The use of silver as currency in China began in the Sung dynasty, but it was made in the form of a sycee shoe, not as a coin, which practice was maintained even during the latter period of the Tsing dynasty. A sycee shoe is calculated according to weight, regardless of the number of pieces, and there was no legal ratio between the tael and the cash. There are different sycee values owing to the difference in fineness, causing great confusion. For instance, we have seven different kinds of tael in Peking, and six different kinds of tael in Shanghai. What confusion? Some taels like the Shanghai tael are fictitious. No Shanghai tael sycee is ever minted, but is merely used for calculations. Since the introduction of the silver coin, the use of the tael has greatly decreased. (The Kuping tael is regarded as universal because the Tsing dynasty used it in Government transactions). Since the founding of the Republic public funds are received and disbursed in dollars, not taels; but some interior places still use the tael, and even traders in Shanghai use it. It would perhaps be surprising to learn that there are no less than 65 different kinds of silver tael in China!

IV. *The Silver Dollar.*—The first Chinese silver dollar was minted, curiously, in Tibet, in the 57th year of the Chien-lung Tsing dynasty. It was called the "Chien-lung precious treasury silver coin." Foreign dollars came into China after the opening of trade with foreign countries, first appearing in Kwangtung, then Kiangsu, Chekiang, Fukien and other coastal provinces, then river provinces, then Tibet, etc. Minting on a big scale began in the 17th year of Kuang-Hsü in Kwangtung. The coin was called the Kuang-Hsü Yuan-Pao—"precious coin"—and weighed 73 candareens Tsao-ping tael. Other provinces followed suit, the weight and fineness differing and causing confusion. At last in the 29th year of Kuang-Hsü an effort was made to unify the weight and fineness. An Edict was issued to establish a head mint at Tientsin to unify the form of dollar. The head mint was completed in the 31st year of Kuang-Hsü, and was called Hu-pu (Finance Board) Head Mint. Chang Chih-tung and others advocated the minting of a one tael dollar, but the plan was not adopted. In the 4th moon of the 2nd year of Hsaun Tung, a law was promulgated fixing 7 mace 2 candareens as the fineness of the standard dollar. The head mint submitted to the Imperial Court a design of a new standard dollar, and engraved the steel dies for minting the new dollar, called Ta-Tsing-Yen-Pi (Ta-Tsing Silver Coin). In the 5th month of the 3rd year of Hsuan Tung (1911) the Nanking and Wuchang Mints began to mint a standard dollar, expecting to issue the same in the 10th moon when the new currency law was to be enforced, but the revolution came in the 8th moon (October 10th), and the standard dollar circulated earlier than expected for Republican soldiers' pay. Later Szechuan minted the Ta-Han-Yen-Pi (silver coin of the Great Han). In February, 1913, a National Coinage Law was promulgated. The standard dollar under the new law was first minted by the Tientsin mint in December, 1913, and the fineness was fixed at 89 per cent. pure silver instead of 90 per cent. (of Tsing dollar). The mints sold their dollars to banks, etc., just as a shop sells goods, according to market prices. Currency is for use as a medium of exchange of commodities, but the Chinese dollar became itself a commodity, and does not fill the office of a fixed universal medium of exchange for commodities. Foreign banks and big Chinese business transactions are calculated in taels. According to available figures old style dollars minted by all the mints amount to $250,000,000. The average dollars contains about 64 candareens Kuping tael of silver. Some of the old dollars minted by Kwangtung, Tientsin, etc., contain a small percentage of gold, due to incomplete assaying.

V. *The Dime.*—Dimes were first minted in the 20th year of Kuang-Hsü, in Kwangtung and Hupeh. Although it ought to be a token coin, yet strange to say, it is also treated as a commodity, its value fluctuating subject to supply and demand. In the 33rd year of Kuang-Hsü the Finance Board got the Imperial sanction to regulations providing that one dollar should equal ten dimes, or 100 coppers or 1,000 cash, all in decimal progress, but this was never actually enforced. Different exchange rates had to be fixed for the dime with respect to the dollar and to the copper. At present $1 exchanges for 11 dimes, and 1 dime for 11 coppers. Old style dimes minted by all mints amount to $370,000,000.

VI. *Standard and Unit.*—China hitherto used the one-cash piece, and had no standard or unit. The unit was the one-cash piece, and the standard was copper. After opening to foreign trade, foreign dollars came in, and Chinese dollars were later minted similar to foreign dollars. Since silver and copper coins are not connected with each other, really there is no standard. The currency reform movement began with a telegram from the Grand Council to all provinces (11th moon, 25th year of Kuang-Hsü) enquiring whether a one-tael dollar should be minted. Most provinces objected and recommended the continuance of the 72 candareen dollar. Another effort was made in the 29th year of Kuang-Hsü when the Government, because of falling silver values, caused great exchange losses on foreign loans and the Indemnity, approached the United States Government with a request for assistance and remedy. Mexico also made an effort to solve the currency question.

America appointed an International Exchange Commission to study and determine the best method for silver-using countries to adopt in instituting a gold standard. Dr. Jenks, representing the commission, came to China and submitted a currency memorandum to the government recommending a gold exchange standard, and fixing a gold currency unit, while continuing to use silver in the country, fixing the ratio at 1.32. The Grand Councillors and others opposed the program and dared not carry it out, but the suggestions served to call the attention of Chinese officials to the importance of currency reform, and a long controversy ensued between officials regarding the question of standard. Most government authorities favored the use of a silver standard.

In the 4th moon of the 2nd year of Hsuan-Tung (1910) the Finance Board secured Imperial sanction for the promulgation of regulations fixing silver as the standard with 72 candareens as a unit. In 1911 the government entered into an agreement with the Group banks for a loan of £10,000,000 for Manchurian development and currency reform, and appointed delegates to London to discuss currency reform with currency experts of the countries represented in the Group.

In the 8th moon the Finance Board received Imperial sanction to transform the Currency Investigation Bureau (under Sheng Kung-pao) into the Currency Bureau to take over complete control of currency reform. Enormous amounts of standard dollars and 1-cent token coins were minted, sufficient to enforce the reform scheme. Unfortunately for the scheme the revolution broke out, and currency was thrown into greater confusion than ever before. The above is the history before the Republic.

In the winter of the first year of the Republic (1912) Dr. Vissering, of Holland, brought his book on China Currency Reform to Peking, recommending the simultaneous adoption of a gold exchange standard and a silver standard; the new unit to contain 0.3644883 gram of pure gold; all books of the state bank to be written in gold currency; gold notes to be issued to represent the new gold unit, inconvertible into gold in China but convertible into foreign gold coins in foreign countries where a Chinese reserve is available; existing Chinese and foreign silver and copper coins to be allowed to circulate according to their intrinsic value, until several tens of years afterwards when China would be strong and be able to prohibit counterfeiting; then the ratio to be fixed at 1.21, and silver dollars to represent the gold unit to be minted thereby adopting solely the gold exchange standard. The book produced a good deal of discussion among officials and people.

VII. *National Coinage Law.*—This law was promulgated on March 8, 1914, fixing silver as the standard, and making a 72-candareen dollar as the unit, and to be called one yuan; token coins to be in decimal progression. The purpose of this was to unify the multifarious currencies, to recall old dollars and coins, and to issue new standard coins in their stead. Reforms already carried out in this connection are as follow:—

(1) The design of the dollar has been unified, bearing the portrait of Yuan Shih-kai. This is much better than formerly when each province had its own design, the coin being uncirculatable in other provinces. Now the Yuan dollar can be used anywhere, without restriction. Token coins such as the half-yuan, 20-cent pieces and 10-cent pieces were also minted, the designs being issued by the head mint to the various mints.

(2) The weight and fineness were fixed, the fineness being 89 per cent. pure silver, each dollar to weigh 72 candareens Kuping, the net amount of silver being 64.08 candareens. The maximum variation in weight and fineness allowed is 3/1000th, any coins found showing variation to be re-minted. All mints are required strictly to observe this law. The mints send specimen dollars to the Ministry of Finance to be assayed and tested, and the banks on receiving new dollars also send specimen dollars to the Ministry to be assayed.

(3) To maintain decimal progression, a mint is not allowed to overproduce. The Bank of China and the Bank of Communications are ordered to exchange standard coins at legal rates, and the Government is enforcing the law gradually. Success has already been attained in Chihli; Shantung, Shansi, Honan, Kiangsu, Anhui, Chekiang, Fukien and Kwangtung will be dealt with as the second stage; Kansu and other provinces as the third and Manchuria and other provinces as the fourth.

(4) The market rate of standard coins to be abolished in order to avoid fluctuation. Formerly coins were treated as goods, with market prices, because dollars varied in fineness and weight and because the Government used the tael in public funds. Now coins have been unified and the Government uses the dollar in public funds. The Government now allows people to bring silver to the mint, and on payment of six li (6 candareens) per dollar as minting expenses, they can obtain dollars for silver. With free coinage the market fluctuations will be naturally abolished. The market price of old style dollars is now gradually coming to the same level as the legal rate, showing the success of the Government scheme.

The Government's Policy

The Government is recalling the old dollars and destroying them. The mints up to February, 1918, have minted 184,946,487 pieces of one yuan new dollars, and destroyed 51,679,151 old dollars. (Here follow reasons for adopting gold and the issue of gold notes similar to the petition to the President).

In promulgating the National Coinage Law of the third year of the Republic (1914) with silver as a standard, the Government did not mean to have silver as the ultimate standard, but had an eye on the ultimate adoption of a gold standard, the said law being a preliminary step. At present one-third of China's budget expenditure is on foreign loans and indemnity, which are in gold. Moreover, China is now borrowing large sums in gold when gold is cheap and receiving reduced silver equivalents of loan proceeds, but when China repays after the war when gold will resume normal value, China will have to pay excessively large amounts in silver as the gold equivalent, thereby suffering two losses, one at the time of borrowing, and another loss at the time of repayment. If we adopt a gold standard this loss can be avoided. This shows that for the sake of national finance it is necessary to adopt a gold standard. This is reason No. 1. Reason No. 2 is that the adoption of a gold standard will reduce the risks of speculation at present encountered by Chinese and foreign business men engaged in international trade. Reason No. 3 is that all world powers adopt gold standard, and China should not differ from them.

VIII. *Why a Gold Note is necessary* (preliminary to a gold standard).—Although it is imperative for China to adopt a gold standard, we have to take into consideration the difficulties of carrying out such a measure. In the first place China does not produce much gold, and does not hold much gold. It would be difficult, therefore, to mint gold coins at once. Secondly, the normal ratio between gold and silver is disturbed by the European war, and it is not advisable at present to fix the legal ratio. In the circumstances it is necessary to make some modifications in methods in carrying out our program. We will adopt the suggestions made by a former Secretary of State for Finance of the United States, and the suggestions of Dr. Vissering, modified to suit present conditions in China, and fix a gold unit called the Chin-yuan (gold dollar) to contain 0.752318 gram, equal to 2.01688 candareens, Kuping weight. One-tenth of a gold yuan should be called a gold dime: 1/100th should be called a feng: 1/1000th should be called a li: all in decimal progression. The Government will permit the Bank of China and the Bank of Communications to issue gold notes. These two banks will keep a separate set of books in gold currency. The notes will be used in deposits, loans and other transactions, to gather together the people's surplus gold and to make people accustomed to the use of gold. On the other hand, the Government will foster the growth of China's international trade and increase the circulation of gold notes so as to secure a big gold reserve, and at the proper moment, the Government will declare the ratio between gold and silver, and enforce the gold standard. Then the gold note or the gold dollar will take the place of the silver dollar, and the silver dollar may be gradually recalled or used as a token coin of the gold yuan, and the token coins provided in the National Coinage Law will continue to be used as token coins, of the gold yuan. In this way, no disturbance or panic will be experienced by the market and the gold standard will come into force automatically.

IX. *Unification of Silver and Copper Coins.*—The problem which must be solved before the adoption of the gold standard is the clearing up of existing currency confusion and entanglements. The Government hopes to accomplish this by rigidly enforcing the National Coinage Law, to unify the various existing coins. (The methods are described at this stage and are the same as outlined in the detailed regulations governing the operation of the law).

Method 1.—(a) Relating to new silver and copper coins.—At present although the Tientsin mint is called the head mint, it has no real power over other mints, which act independently. This is a serious obstruction to currency unification. The first step is, therefore, this:—The government will effect the unification of the various mints. At present there are too many mints. We will reduce the number, and make Tientsin the head mint. The Nanking mint will be moved to Shanghai; the Wuchang mint will be moved to Hankow, while the Canton mint will remain. Thus we will have three provincial mints, viz., at Shanghai, Hankow and Canton, which will be called branch mints. The removal of the Nanking and Wuchang mints is proposed because Shanghai and Hankow are great trading centres, and to establish mints there would effect great saving in transportation expenses, etc. Another reason is that the mint authorities can easily feel the pulse of market requirements and judge the supply and demand, at these trading centres. The administration, and the employment of officers for three branch mints, will be under the control of the head mint, as also the control of the weight and fineness of coins, etc., and will be subject to inspection by the head mint.

(*b*) To secure the confidence of the public in new coins, it is imperative to remove all doubts *re* weight and fineness. So far the mints have strictly observed the requirements of the Coinage Law. To provide additional caution we propose to establish the National Coin Assay Bureau. There is an assay office in the Ministry now, but the scope will be enlarged, and wider powers to control the weight and fineness of coins from all mints will be given. The Assay Bureau will send inspectors to inspect the working of all mints, take specimen coins, and assay them. They will also buy coins from the market and assay them, and the result will be recorded in a statement to be published every month. The Assay Bureau may engage a foreign assayist to do the assay work, and to inspect mints.

(*c*) The Currency Bureau will have a Coin Examination Committee to be organised as follows:—one senator; two members of the Finance Ministry; one of whom to be a member of the Currency Bureau; five members from the Chambers of Commerce of Peking, Tientsin, Shanghai, Hankow, and Canton—one member from each place; one chemist professor of a State University; one member of the Bank of China; and one member of the Bank of Communications. Foreign business men may be engaged as advisors.

(*d*) The Banks of China and Communications will be appointed to circulate the standard coins and do exchange operations at legal rates. These two banks may appoint other banks to do similar work.

Method 2.—Re foreign dollars and Chinese old dollars.—(*a*) The Government will order that after a certain date, mints shall not be allowed to mint old style dollars.

(*b*) The Government will recall and destroy foreign dollars and restrict the import of foreign dollars.

(*c*) The Government will order that before a certain date people shall be at liberty to send in old and foreign dollars to be exchanged for standard dollars, after which date foreign and old dollars will not be regarded as dollars, but as so much bullion and worth only the intrinsic value of the silver they contain.

(*d*) All public offices such as telegraph, post and tax offices shall send old and foreign dollars collected as revenue, etc., to the Bank of China, which will send them to the mint to be exchanged for standard dollars.

Method 3.—Unification in bookkeeping.—Some traders still use taels in their bookkeeping and transactions. With strict enforcement of the new law, the day will come when the Government will find it practicable to abolish altogether the sycee tael, and the brass cash, the only thing needed being the confidence of the people in the standard coins.

(*a*) The Government will order all public offices, including the Maritime Customs, to adopt the *dollar* only in their bookkeeping. The treaty nations will be consulted regarding the conversion of the tael collections of the Maritime Customs into dollars at rates fixed by the Currency Bureau. The Government will require all commercial transactions to be recorded in terms of dollars.

One fact to be noted is that less and less one-dollar pieces will be minted hereafter, and their place will be taken by the half-dollar pieces because the half-dollar piece is destined to be the token coin equal in value to one gold-yuan.

The above is the Government's policy *re* hard metal currencies.

X. *China's Paper Currency.*—Paper currency was used in China as early as the Sung Dynasty, and was continued in the Yuan and Ming dynasties. The Sung Dynasty note is called a Chiao-tzu-hui note. In the Yuan dynasty the Chiao-tsao and Pao-tsao notes were issued. In the Ming dynasty the Ta-ming pao-tsao notes were issued. In the Tsing dynasty the Tsao-kuan notes were issued during Shun-chih's reign, and Pao-tsao notes in Hsien-feng's reign. These are all state notes. Silver notes and cash notes were issued in Peking in Hsien-feng's time, and the Government banks were established in Peking and other cities as exchange agencies.

In the 3rd moon of the 31st year of Kuang-Hsü, the Hu-Poo Bank issued notes. In the 1st moon of the 34th year of Kuang-Hsü, the Hu-poo (Finance-Ministry) Bank was changed into the Ta-Ching Bank, as a State bank, with privilege of note-issue. Up to the 6th moon of the third year of Hsuan-Tung (1911), the Ta-Ching Bank issued tael notes to the amount of Tls. 5,438,910.75, and dollar notes to the amount of $12,459,907.89.

After the Revolution of 1911 all Ta-Ching Bank notes were recalled. The Ta-Ching Bank was transformed into the Bank of China, whose charter was promulgated in April, 1913, with the privilege of note-issue.

The Bank of Communications was established in the 33rd year of Kuang-Hsü, Imperial permission was secured by the Board of Communications and Posts. The charter was promulgated in March, 1914, with the privilege of note-issue.

The Ping-shih (Market Adjustment) Bank of the Finance Ministry was established in the 3rd year of the Republic (1914) at Paoting, and in Peking and Tientsin in 1916. It issues copper coin notes.

Up to December 1917 the Bank of China issued in all $71,892,962 of notes, including $32,089,059 Peking notes. The Bank of Communications issued in all $28,027,123 notes, including $17,585,527 Peking notes.

Great confusion was caused by the note issues of provincial banks. In Kwangtung provincial notes were recalled after one month's hard work in July, 1914, $31,645,504 worth of notes being redeemed at an arbitrary rate of .455 exchanged against $14,398,707 Bank of China notes. The Central Government sent a big sum for this purpose. Conditions are very bad in Hunan, Hupeh, Szechuan, Manchuria, and Sinkiang.

The Government policy is to restrict provincial issues and let only the two Government banks issue notes. The Government will order the two banks to secure an adequate reserve to cover their note issue and to concentrate their reserves at six trade centres, viz., Tientsin, Shanghai, Hankow, Chungking, Canton and Changchun.

Peking depreciated notes will be cashed as soon as the Currency Reform Loan is concluded, when the government will repay all indebtedness to the two banks to enable them to resume specie payment.

Restrictions will be laid on provincial and foreign banks and they will not be allowed to issue notes after a certain date. These banks may get notes from the Bank of China and Communications for issue if they so desire.

The above is the Government policy *re* paper currency.

XI. *Currency Bureau.*—This Bureau is to be under the Premier. It will take charge of (1) investigation of currency conditions; (2) formulation of reform schemes; (3) carrying out of such schemes; and (4) administrative affairs relating to banks and currency. It will complete its task in ten years. It will have the following offices:—(1) a Currency Investigation Committee, whose function will be to investigate and study conditions in China and abroad and suggest reform schemes; (2) an Assay Office; (3) Coinage Examination Committee, to examine and test coins.

The Currency Bureau should compile every quarter (three months), a "work accomplished report" to be sent to the President and Parliament, and to be published in the "Government Gazette," and translated into foreign languages to be published by the Bureau.

A Republic with Two Parliaments

The Allied Powers are asked to Support a Constitutional instead of a Militaristic Government

The world is at this moment afforded the entertaining spectacle of a Republic with two Parliaments, each claiming to be the legitimate law maker and each busily engaged roundly anathematizing the other. Each declares the other bogus. One is in session at Canton, and the other has just been inaugurated at Peking. Both are on the point of electing a President for China! The one in the South is in working shape after many vicissitudes. The members were originally elected when Yuan Shih-kai was President. He eventually found it an extremely awkward institution to handle if he wished to succeed with his own plans, and peremptorily dissolved it. After his death the members were recalled from the obscurity into which they had been so unceremoniously plunged and again they went into session at Peking. Once more, however, the ruling military leaders discovered Parliamentary control to be incompatible with the free and easy go-as-you-please style of government they wished to maintain and after a conference of Tuchuns at Peking the Parliament was, for the second time, dissolved at the behest of the notorious Chang Hsun, who attempted to reseat the Manchus on the Throne. Although Chang Hsun's overthrow was quickly effected by Tuan Chi-jui, the old Parliament was not recalled.

Tuan Chi-jui wanted it no more than the late Yuan Shih-kai or Chang Hsun. It was *too* radical, *too* democratic, and possessed too great a hunger for a constitution calculated to place the powers of government in the hands of the representatives of the people. A Parliament with such iconoclastic ideas as these naturally clashes with the notions of militarists of the old school such as the Tuchuns of the northern provinces, and wanting none of it they have ignored its claim and have spent millions in an abortive attempt to suppress the revolution which developed to secure its permanent restoration. But to camouflage the militaristic cabal to look like a republican institution the northern Tuchuns have organized a Parliament of their own, and that is now making a bid for international recognition as the legal organ of the Republic. And the extraordinary thing is that the foreign Powers tacitly recognise it as representative of China, despite the fact that active revolution is afoot and the members of the legally elected and twice illegally dissolved Parliament have assembled at Canton and are in session. The claims of the Canton Parliament for recognition as a belligerent government fall on deaf ears. For one thing the foreign plenipotentiaries are tired of the turmoil that has existed for years past; they have enough worries connected with the Siberian expedition and other war requirements, and—the summer is a hot one. They do not want to be bothered with China's internal squabbles at this juncture. What they want is a certain amount of quietude and some sort of organization in the Capital which will function sufficiently to dispose of international questions, and enable them to carry on till the war is over. They probably feel that recognition of the South will precipitate complete disorganization. Yet the Canton Parliament is the only legal one—if the term can be employed in a case where everything is illegal—and therefore the only one actually entitled to recognition. Undoubtedly the Peking assemblage is bogus, but it enjoys "recognition," or rather tolerance, because it happens to be quartered in Peking where the diplomats are established. It would not be recognised were it in Canton and the Canton group in Peking. In that case the situation would be reversed, and solely because of that there are distinct and unanswerable reasons why the Powers should put the Southern Confederation or whatever it is called on the basis enjoyed by a belligerent power with an acceptable cause.

The belligerency, the turmoil, the chaos—describe it as you will—which obtains in China to-day would not be increased by recognition. If anything the mess would be minimised, for the Tuchuns, who are now at loggerheads among themselves, would recognise that their "cause," which is *not by any means the cause* the Allied Powers are fighting for in Europe, was hopeless, and they would come to terms with the Constitutionalists in short order. As belligerents the South could borrow money and go on its way rejoicing as a government. It could straighten matters out in the territory which it for the time being dominates, and the usupers in the North could not have it all their own way in the matter of intercourse with the foreign Powers.

It is believed by many that the Allies tolerate the Militaristic coterie in the North because they labor under the misapprehension that the militarists were the ones who brought China into the war. If the foreign representatives in Peking are acting on that ground the sooner they refresh their memories as to the motive power behind China's declaration against Germany the better. China took action against Germany solely because a group of the Young China party, now in Canton, forced the Cabinet then in power in Peking to do so. The struggle this group had to persuade the pro-German faction in Peking that China must sever relations with Germany was an extremely hard one, and is well known to the diplomats of the Capital. They might wish to close their eyes to this aspect of the affair, but they will not be honest if they do so. Although a contemporary is publishing an alleged "inside" story of the entrance of China into the war it does not give anywhere near a true statement of the circumstances, nor does it give the actual motive for the act. The writer endeavors to persuade readers that the Peking Government was moved by a whole-souled lofty desire to demonstrate intense disapproval of German actions. Nonsense! The Peking Government at the time was pro-German, and had it not been for the untiring zeal of certain young Chinese, backed by the moral support of one diplomat, and the active assistance and encouragement of certain allied subjects and citizens China would not have severed relations with Germany. We know whereof we speak in this matter. So do the diplomatic representatives in Peking. And because that is the case they do grave injustice to men who rendered signal service to the Allied cause when they pretend to believe that they owe China's association with the Allies to the present Peking Government. They owe it to men now in the Southern Parliament.

The Parliament in Canton was re-opened to business early in August with a quorum, and reports indicate that it is quietly progressing. A manifesto has been written and published to the world vigorously setting out the claims of the South. The document is published herewith and it speaks for itself. At least it should receive the sympathetic consideration of all who pretend to wish well to this distracted country. The South is fighting for constitutional procedure, and the North is representative of militarism pure and simple, and we would like to know which of these parties the Allies should support if they consider their professed war policy applicable to the Far East as well as to Europe and other spots where enemy armies lurk.

The Southern Parliament further issued a statement of policy with regard to Peking and its doings on August 21, and, according to the "Shanghai Gazette," it published a document of which the following is a summary:

> As the result of the exploits of the traitors, who are selling China and violating all its laws under the protection of military force, disaster is staring us in the face.
>
> By virtue of the Provisional Constitution, the citizens are masters of the Republic, and the Permanent Constitution should be made by the Parliament. Before the promulgation of the permanent constitution, the provisional constitution will remain in full force. But the Constitution Conference has twice been dissolved illegally and the country is plunged into a state of anarchy.
>
> For this reason, the South has risen in arms to protect the law, held an extraordinary session of the Parliament and organised a Military Government. The South is now united under the Military Government, and the Parliament has decided to hold a special session with the intention of simultaneously continuing the Constitution Conference and holding a Presidential election.

In the meantime, we make the following resolution based on the true will of the people:—

1. Pending the resumption of his power and duties by the President of the Republic of China (Li Yuan-hung) in accordance with law, all laws promulgated and orders issued in contradiction of the spirit of law-protecting, by the illegal government shall absolutely be null and void.

2. Treaties concluded and loans floated by the illegal government shall absolutely be null and void so long as they remain unconfirmed by the Parliament in accordance with law.

This is a bold stand to take when the nature of the transactions entered into by Peking, and which are now declared invalid, is taken into consideration. Yet the Allies cannot raise any voice against the procedure for the simple reason that they are fighting in Europe to uphold democratic parliamentary government, and that is something which has not been behind the Peking coterie for a considerable time.

What the alleged Parliament at Peking will do cannot be foretold. It has elected its speakers and vice-speakers and committees for both houses, and maybe if there is any real force of independent opinion embraced in it that element might use its votes in the interests of square dealing. If so, and there are enough votes on that side, then the end is certain—there will be a compromise of some sort which will enable the Constitutionalists to inaugurate a regime under proper auspices. This will mean, of course, depriving the Tuchuns of power to use the army for personal ends, and if that one thing and nothing more is accomplished then there is a better era in sight for China. The Allies at all events can do nothing in support of a militaristic combination, and that being so they ought to lend their aid to those working for constitutionalism. They can signify their determination to carry out to the extreme their war policy by recognising the Constitutionalists as belligerents. Following is the manifesto of this party:

The Claims of Chinese Constitutionalists

Manifesto of the Constitutionalists to the Foreign Powers: On the formation of the reorganised Military Government of the Republic of China, the Administrative Directors think it fitting and proper that a statement of the cause of the present unfortunate civil war and the object of the Constitutionalist movement should be made to the foreign nations, Allies and friends of the Chinese Republic, so that the issue may be clear to them and the responsibility for the war and the justice or otherwise of the opposing causes may be judged by the public opinion of the world.

The real cause of the war is the militarism of the northern military party with General Tuan Chi-jui at their head. The immediate cause was the illegal dissolution of Parliament. When Germany, contrary to the recognised principles of the law of nations, commenced unrestricted submarine warfare in February, 1917, and the Government of the United States of America invited the then neutral nations to take action, the Chinese Government, having then as its President, Li Yuan-hung, as Prime Minister, Tuan Chi-jui, and as Foreign Minister, Wu Ting-fang, first addressed a protest to Germany and later broke off diplomatic relations with her.

Parliament was consulted when the latter step was taken and the majority in both Houses in favor of it was preponderantly large, being about three to one. This is important as showing that at that time Parliament was at one with the Government as regards its foreign policy. By the time, however, that the question of the declaration of war against Germany was referred to Parliament, the suspicion was widespread that the northern militarists were not envisaging the question on its own merits, that they were contemplating the use of the opportunity to consolidate and extend their own power and influence, and that the assistance, financial, military, and moral which it was expected the Allies would accord to China when she entered the war would be turned for the purpose not of active pursuit of warfare against Germany but of furthering their own selfish ends.

General Tuan was holding at this time a conference of the militarists in Peking and men like Ni Sze-chung who, before their arrival at the conference, had been most strong in their opposition to even the rupture of relations with Germany, were now the strongest advocates of war. So strong were their convictions that on the day of the debate in Parliament, with the complicity of Tuan, they sent a large mob of vagabonds, and street ruffians to the House of Representatives to clamor for war, assault some of the members known to be adverse to it, and in fact besiege the House for several hours from early afternoon until late in the evening while the police looked on and did nothing.

The President, perceiving that General Tuan no longer held the confidence of the country and was no longer fit to hold the reins of government, particularly at a time when the Government was taking such a momentous step, dismissed him from the Premiership. General Tuan went out of office with such little grace that he sent the famous telegram to his friends and proteges, the Military and Civil Governors of the different provinces, informing them that he was no longer responsible for the peace and order of the country. The result of the broad hint was at once manifest. One after another, the addressees demanded Tuan's return to office, and, to enforce that demand, declared their respective provinces independent of the Peking Central Government, established a general staff office, seized the railways leading to Peking, and marched their troops towards the capital. At this juncture, a general, Chang Hsun, known for his continued loyalty to the Manchu Court, who was privy to the schemes of the militarists but had so far taken no active part, became their spokesman had undertook to come to Peking and to mediate between the practically beleaguered President and the rebellious Military Governors on condition that Parliament, object of hate to military tyrants in all countries, be dissolved. That the Provisional Constitution gave no power of dissolution to the President; that Parliament was then sitting not only as a legislative organ but also as a constituent assembly, having been endowed by the Provisional Constitution with the power to frame the Permanent Constitution, and had almost completed its task; that, if Parliament as at present constituted had defects, it was patent to none more than the members themselves and they were indeed on the point of redrafting the Parliamentary Organisation and Election Laws; all these arguments were of no avail. President Li in a moment of weakness and shortsightedness, gave way under the pressure of the militarists and signed the decree of dissolution, thinking thus to avoid bloodshed and ease the situation, but contrary to the advice of the acting Prime Minister, Dr. Wu Ting-fang, who refused to countersign the decree and resigned.

Subsequent events defied imagination. Chang Hsun arrived with several thousand troops in Peking and in one night restored the Manchu boy Emperor and made himself the first Minister. Because he had the privity of the militarists to his coup, he fondly imagined he had their support as well. He was, however, immediately to become the victim of their duplicity. They repudiated the restoration and denounced him. Tuan, putting himself at the head of a few thousand troops in the neighborhood of Peking commanded by one of his proteges, marched against Chang, defeated some of his troops in two skirmishes, forced Chang to seek refuge in a foreign legation, and entered Peking as conqueror. He had himself reappointed Premier by President Li but the appointment was invalid because it needed the confirmation of Parliament. President Li then vacated office, although he had not tendered any formal resignation. Vice-President Feng Kuo-chang thereupon succeeded as Acting President.

Ever since the illegal dissolution of Parliament, more than thirteen months ago, the Constitutionalists have not ceased to demand the reconvocation of Parliament. They believe that no nation can lead a proper existence without the reign of law as opposed to that of force. They believe that the Constitution of the Republic, as the supreme law of the land, should be sacred and inviolable. They believe that even if Parliament, a new institution in this country, shows room for improvement, the changes should be made according to the due process of law and not be accomplished by an arbitrary dissolution dictated by generals supported by bayonets. If such acts be tolerated it would mean that in future any general with enough soldiers at his back could, rightly or wrongly, point to any clause of the laws of the land or any government institution in the country as objectionable to him and order a change to suit his ideas, ideas which originate more often from self-interest than a conception of public weal. With these beliefs they have made repeated representation to Peking to reconvoke the dissolved Parliament in order thus to uphold the sanctity of law.

So far from paying heed to those representations, the Peking Government has established an illegal, single-chambered legislature composed entirely of members appointed by itself and has ordered it to remake laws for parliamentary organisation and election. That accomplished, farcical elections are now being held of members of the new pocket Parliament which, nominally representing the whole country, in reality not only does not represent the Constitutionalist provinces, where, of course, no elections are held or are permitted by Peking to be held, but does not even represent the people of those provinces where elections are held on account of the corruption, open and rampant, practised at the so-called elections.

Finding argument and reason to be of no avail, the Constitutionalists have been compelled to the regrettable necessity of resorting to arms, since the militarists appear not to understand any argument save that of force. At the same time, no pains have been spared time and again to make clear that the sole aim of the Constitutionalist movement is to uphold the law and constitution and the sole claim is for restoration of the dissolved Parliament. If the order for reconvocation be issued to-day there will be peace to-morrow. Why need the delay in the performance of such a simple act of justice cause the country to be plunged a single hour more into the miseries of the most terrible of wars, civil war? On whom is the responsibility?

So far from attempting to reach a pacific settlement with the Constitutionalists, the militarists are making every exertion to crush them. Troops have been drawn from every part of the country that can be made to obey orders at the expense of the preservation of local good order. Funds which should be devoted to constructive purposes are diverted for war, and the remission of the Boxer Indemnity payments by the Allied Powers, though with best intentions, has but furnished the Peking militarists with more silver bullets against their Constitutionalist brothers. Finding funds still insufficient, they have resorted to borrowing, selling and mortgaging the richest mines, the stable revenues and the most profitable railways without the least scruple. They have revived a traffic forbidden even under Manchu *regimé* by municipal law and international agreement, the opium traffic, and, what is worse, the Peking Government itself is the trafficker, buying the poison from the opium merchants and selling it to fellow citizens, thus making a handsome profit out of the transaction.

When one of their own number is suspected of sympathies with the Constitutionalist cause, he is invited by another general to his house and immediately, without even the semblance of a court-martial, is shot, and on the following day a Presidential decree is issued posthumously indicting him for his alleged crimes. Tuan's Militarist Government concludes important conventions with Foreign Powers in which the nation is committed to grave undertakings of unknown extent without Parliamentary sanction, and, in spite of the universal demand throughout the country, refuses to even publish the contents and allay the misgivings of the people. It has entered the war against Germany but has manifested no active participation in the war consonant with China's resources in man power and materials, while there is much evidence to show that the Allies have been exploited for the selfish interests of the militarists. Meanwhile, those provinces under the nominal authority of Peking are misgoverned by the military autocrats, floods and famine occur without proper relief or prevention, brigandage is rife, and even foreigners are held for ransom or murdered.

It is against this type of militarism, even worse than Prussianism because it masquerades under the guise of Republicanism, that the Constitutionalists are fighting. Besides the adhesion of the most powerful portion of the navy, they are in complete control of five rich and populous provinces, Kwangtung, Kwangsi, Yunnan, Kweichow and Szechuan, which have declared their independence, while in others such as Hunan, Hupeh, Fukien, Shantung, Honan, Shensi and Chekiang, there are Constitutionalist armies in the field who are in possession of large portions of territory, or there are local sympathisers who have already declared their adhesion to the good cause with cities and districts, or are ready to do so at the first opportunity. Parliament has been invited to assemble in Canton, that same Parliament the election and assembly of which in 1913 caused the Foreign Powers to accord recognition to the Chinese Republic, and there is every prospect that the necessary quorum of a majority of the membership will be obtained within a short time.

Perceiving the necessity for the formation of an effective and united government of the Constitutionalist Provinces and Forces, Parliament sitting in extraordinary session on the 18th of May, 1918, at Canton, reconstituted directors of the new Government. The purpose of the Military Government is not to bring about separation or secession but to uphold the cause of Constitutionalism and the principle of legalism. It is fighting to make China safe for democracy. It is fighting the same fight as the Allies are fighting in Europe, the fight against autocracy. The Constitutionalists are full aware that the wish of the Foreign Powers is the speedy restoration of peace—a wish which the Constitutionalists desire to see realised even more ardently than they but it can be secured only by opening the eyes of General Tuan and his associates to the fact that force cannot secure it, and it will be facilitated by the recognition of the Constitutionalist Government by the Foreign Powers so that in this way the Powers can contribute to the realisation of their wish. Confident of the justice of the cause, the undersigned, representing the Constitutionalist Provinces and forces of China state their case in plain and unvarnished language to the Governments of the Foreign Powers and submit it to the tribunal of the world's public opinion. They appeal to the Powers for support of their righteous cause and for the recognition of the Military Government.

Wu Ting-fang, Administrative Director and Minister of Foreign Affairs; sometime Minister of Foreign Affairs and Acting Prime Minister of the Republic; Envoy Extraordinary and Minister Plenipotentiary to the United States, Spain, Mexico, etc.

Tsen Chun-hsuan, Administrative Director and Minister of the Interior; sometime Viceroy of Szechuan Province; Viceroy of Kwangtung and Kwangsi Provinces; President of the Board of Communications, Peking.

Tang Chi-yao, Administrative Director and Chief of the General Staff; Military and Civil Governor of Yunnan Province.

Lu Yung-ting, Administrative Director and Minister of War; Inspector-General of Kwangtung and Kwangsi Provinces; sometime Military Governor of Kwangtung.

Lin Pao-yi, Administrative Director and Minister of the Navy; Admiral Commanding the First Squadron of the navy.

Sun Yat-sen, Administrative Director; sometime Provisional President of the Republic.

Tong Shao-yi, Administrative Director; sometime Prime Minister of the Republic; President of the Board of Communications; Governor of Fengtien Province.

On behalf of the Administrative Directors of the Military Government of the Republic of China.

(Signed) WU TING-FANG,

Minister of Foreign Affairs.

Japan's Loans to China

In our August issue we published a list of the loans recently made by Japanese financiers to China. Our attention has been drawn to one error. At the bottom of page 337 (right-hand column) it was inadvertently stated that a loan of Yen 1,000,000 for the suppression of plague was made by the Yokohama Specie Bank. That loan was made by the Group Banks, the Japanese portion of which was one-quarter of the total amount, and was $1,000,000, and not Yen 1,000,000.

In the list given we omitted two loans as follow:—

October, 1917, Loan by four Group banks, plus the International Bank, Chartered Bank and Belgian Bank, for flood relief, Shanghai Taels 700,000; the Japanese portion being Tls. 100,000.

January, 1918, Supplementary loan for Kirin-Changchun railway, Yen 630,000.

ENGINEERING, FINANCIAL, AND INDUSTRIAL NEWS

RAILWAYS

Chosen Railway Profits.—It is stated that since the South Manchuria Railway Company took over the management of the Chosen Railways, a few months ago, the profit has amounted to Yen 700,000. The present indications point to no inconsiderable surplus profit being realized before the current fiscal year is over after paying to the Government General of Chosen the stipulated 6 per cent. profit. On August 23 an agreement was signed at Seoul in which the South Manchuria Railway Company agreed to pay to the Government General of Chosen a sum of money corresponding to 6 per cent. of the investment of the Government General, the repairing and other auxiliary work on the Chosen Railways to be undertaken by the South Manchuria Railway Company. The extent of the investment of the Government General of Chosen was put at Yen 51,000,000 at the end of last August. In the present fiscal year outlays for new construction have to be added and the total reached Yen 59,000,000.

Rolling Stock for Manila.—Additional rolling stock for the lines of the Manila Railroad Company, in the form of 200 new freight cars, which have been given priority classification in construction by the federal government authorities, is now being manufactured at Hamorton, Pennsylvania, and will arrive in the Philippines early next year.

S.M.R. and Kirin-Changchun Railway.—The through traffic service between the S.M.R. Lines and the Kirin-Changchun Railway was recently inaugurated. Each goods traffic station on the S.M.R. Lines is open to through traffic. On the Kirin-Changchun Railway, Hsiachiutai, Huapichang, Chiuchan, and Kirin are the through traffic stations. The junction station is Changchun. The timber dealers, in particular, will welcome the opening of the through traffic service.

Supingkai-Chengchiatun Railway.—Mr. Wu-wu, Director of the Supingkai-Chengchiatun Railway, is reported to have remarked that the proposed extension of the railway either to Taonanfu or Kailu is likely to be fixed shortly, but the present appreciation in prices will force the management to put off actual construction work. Mr. J. Fujine, Chief Engineer of the railway, recently returned to Supingkai from his inspecting tour concerning the proposed extension.

New Rolling Stock for S.M.R.—New rolling stock for the S.M.R. Co. during the current fiscal year was ordered from the United States, in the shape of ready-made locomotives and iron parts of goods cars. The first order given comprises 25 locomotives and 500 goods cars, followed with a second consisting of 500 goods cars. The iron parts of the 500 goods cars of the first order are arriving at Dairen and being sent to the railway workshops, Shahokou, to be re-erected. A good number of goods cars are expected to be ready for use by the advent of the new produce season. The locomotives are expected here before the end of this year, and the second order consisting of 500 goods cars about next summer.

MINING

Oriental Iron Manufacturing Co.—A smelting furnace ordered from the United States by the Toyo Seitetsu Kaisha (Oriental Iron Manufacturing Company) arrived at Yokohama last month on the *Alps Maru*. Two more furnaces are expected to arrive at the same port by the middle of September. These furnaces will commence to operate in February or March next.

Siberian Troubles.—A consular report from Nicolaevsk states that the union of miners at Nicolaevsk has passed a resolution that all mines in that part of Siberia will be nationalized. The Soviet, however, says that this resolution applies only to those mines owned by Russians, those owned by foreigners being untouched.

New Coal Seam at Niushsintai.—Mr. J. Tanaka, residing at Dairen, is reported to have struck a new coal seam near Niushsintai Colliery and has already commenced mining under the title of the Telung Kungsu.

Iwate Colliery Company.—Another colliery company is about to be formed in the north-east of Japan, with a view to working a coal-field extending 14,852,000 square yards in Kokonohe-gun, Iwate Prefecture. The annual output is estimated at 200,000 tons.

Segano Colliery Company. — The Segano Tanko Kaisha (Segano Colliery Company), promoted with a capital of one million yen, has been organized. Mr. Hiroshi Abe, former Governor of Tokyo, was elected president.

The Mines in Kwangtung.—The Chinese Minister in Japan reports that Tong Shao-yi has succeeded again in getting loans from Japan on the security of the mines in Kwangtung.

Suan Mine Output.—The milling plants on the Suan Concession, Korea, during the month of July, treated a total of 17,500 tons of ore with a gross production of Yen 252,000. Shipments of high grade ore from the Tong Ahm Mine to the Tul Mi Chung mill are being continued and the developments at Tong Ahm and also the prospects continue to be most satisfactory. During the past month a new high grade orebody has been discovered in the Tul Mi Chung mine which is being energetically developed. This is an entirely new orebody and gives every hope of being of considerable size.

The Director of the Board of Finance of Mukden, having been ordered by the Department of Finance, has issued an instruction to the following effect :—As iron mines have very important relations to military affairs all iron mines are prohibited from being operated by private persons and even those already opened if they are on a rather large scale should be turned over as government owned.

Chinlingchen Iron Mine.—Mr. S. Sakaguchi (Director of the Railway Department of the Tsingtao Civil Government) returned to Tsingtao recently and said the working of the iron mine at Chinlingchen is to be taken up. A railway siding from Chinlingchen Station to the iron mine is to be constructed. The mining plan has been drawn up with the annual outputs estimated at 200,000 tons. The estimated cost for the mining equipment and transportation of output is about Y.1,360,000.

New Iron Works.—The Tokyo Wire Netting Manufacturing Company has organized as its auxiliary concern the Nippon Kokusan Iron Company with a capital of Y.500,000. This new concern will start an iron smelting mill at Yasugi, Shimane prefecture, which can turn out charcoal pigs to the extent of 5,000 tons a year of dust iron found in that prefecture.

New Korean Mining Co.—It was reported in the "Seoul Press" some time ago that the Asano firm of Tokyo, managed by Mr. S. Asano, the well-known multi-millionaire of Tokyo, had drawn up a plan to establish at Chinnampo a big iron foundry. Owing to difficulty in obtaining electricity and some other trouble, however, the firm has since given up the scheme and decided to establish it at Fushiki, a port in Toyama Prefecture. A large part of the material needed for the foundry at Fushiki will be imported from Whanghai Province. To run the factory the firm will establish a mining company called Chosen Tetsuzan Kaisha with a capital of Y.1,560,000, locating its head office at Tokyo and a branch at Chinnampo. The capital of the company has already been paid up, and Mr. T. Asano and three other gentlemen have been nominated directors.

Anshan Chenhsing Mining Co.—Mr. C. Kido (Superintendent of the S.M.R. Co., Geological Section) has complied with the request of the President of the Anshan Chenhsing Mining Co. (under Sino-Japanese joint management) to officiate additionally as Superintendent of the Mining Department of the Company.

Petroleum from Shensi.—The petroleum that is produced in Shensi is now undergoing a process of refining. According to the report sent to the Ministry of Agriculture and Commerce from the Preparation Bureau it is estimated that the oil can be supplied to the northern provinces for experiment in the next autumn and, within 3 years, its use can be extended to the whole country.

Miners Taxed.—The wolfram miners in Lok Chung district have jointly made a report to the Government that they are being forced to pay an extra tax of $3 per picul by the commander of the reinforcements for Hunan and all the mining works have therefore stopped operations.

Wolfram Ore in Swatow District.—Wolfram ore is being found in the districts of Haifeng, Lufeng, P'u-ning, Kityang, and Wuhua, Fukien Province, China. At first it was found in small quantities here and there on the surface of the ground, but recently its existence in vein deposits has been established. The Wuhua district (old name Changlok) appears to contain the largest deposits of this mineral. A group of villages about Tung-ling-hsia, among which are Chiu-lung and Ho-tung, is the principal centre of production. This particular area is said to cover 6 or 7 square miles and it is here that the ore is found in large veins, being combined with quartz crystals. It is claimed that over 2,000 booths have been erected as shelter for the people who have flocked there in search of "black gold," as it is commonly called by the natives. This area is about 50 miles northward from Hopo, the head of small craft navigation in the Kityang River. Other centres of production are Hei-lin in Wuhua district and Tai-yong in Kityang district. A large market centre for wolfram ore is Wai-chow, and there is little doubt that much of the ore mined in this district reaches that place. With the development of the Wuhua and Kityang fields, Swatow's importance as a market increases, as it is the natural port of export for these districts, says Mr. Myri S. Myers, U. S. Consul at Swatow.

Japanese Hunting for Oil.—It is reported that the Japan-China Industrial Development Company is trying to secure the right to work petroleum veins in Yenchang, Shensi, China, on behalf of the Nippon Oil Company and the Hoden Oil Company. The Kuhara Mining Company on the other hand has already sent a complete set of boring machinery to British Borneo where the company was granted recently the right to work.

SHIPPING

New Steamer.—The new steamer *Ganges Maru* constructed at the Osaka Iron Works to the order of the Osaka Shosen Kaisha was handed over to the O. S. K. recently. She is to work the Australian service.

Yalu River Service.—The Yalu Ferryboat Co., Antung, ordered some time ago from the Takami Shipbuilding Yard, Antung, two river-boats for exclusive service between Antung and the Upper Yalu. The boats were recently finished and are already in service.

Mitsui Shipbuilding Yard.—The shipbuilding yard owned and managed by the Mitsui Bussan Kaisha on the Bay of Kojima, Okayama prefecture, Japan, will be made an independent joint stock company with a capital of Y.10,000,000 shortly.

Asahi Shipbuilding Yard.—The Asahi Shipbuilding Yard, Dairen, has a scheme under weigh to construct a new dock capable of admitting steamers up to 10,000 tons. In consequence, the original plan to increase the present capital to Y.3,000,000 will be altered and the capital will be increased to Y.5,000,000.

Haneda Shipbuilding Yard.—The scheme to establish a shipbuilding company at Dairen under the style of the Haneda Shipbuilding Yard, with Mr. R. Negishi for the Chairman of the Founders' Committee, has been accepted. The new Company is to be capitalized at Y.1,500,000.

Standard Ship Built at Hongkong.—The first standard ship built in Hongkong was launched on August 10 at the Kowloon Docks by Lady May, who acted as sponsor. The ship—which is aptly christened the *War Drummer*, for she has been expressly constructed for war service —was built by the Hongkong and Whampoa Dock Company, who have several other ships in course of construction for the Government. The *War Drummer* is a steel single screw steamer of the single deck, class "C" standard type, having a poop, bridge, and top-gallant forecastle. Dimensions are:—Length overall 338-ft.; length B.P. 325-ft.; breadth moulded 45-ft.; depth moulded 26-ft.; poop, bridge and forecastle 7-ft. 9-in. high. Latest government practice, which ensures speedy loading and discharging of cargo, has been adopted, there being 10 derricks of 5 tons capacity operated by 6 steam winches. The vessel will be propelled by one set of triple-expansion surface condensing engines, the cylinder dimensions being H.P. 23-in. dia., I.P. 38-in. dia., L.P. 61-in. dia., stroke 42-in. Steam is generated in two boilers each 15-ft. internal diameter by 10-ft. long, constructed to Lloyd's requirements and survey for a working pressure of 180-lbs. per square inch. Steam for the auxiliary machinery (windlass, winches, steering gear, dynamo, etc.), is provided by a donkey boiler 8-ft. 6-in. diameter by 8-ft. 6-in. long, constructed to Lloyd's requirements and survey for a working pressure of 100-lbs. per square inch. Excepting the dynamo, the auxiliary machinery was designed and built by the Dock Co. The *War Drummer* has been constructed to Lloyd's highest class.

Shipbuilding in the Philippines.—The Director of the Bureau of Commerce and Industry, Manila, is strongly urging the building of shipping in Philippine yards. His slogan is: "Float every available ton of craft, wood, cement, or steel, for use in the coastwise trade." He says that eighteen ship building concerns located in seven different parts of the islands are prepared to construct craft of 250 tons or less. In the Spanish days galleons were built extensively at Albay and boats large enough to trade with the Dutch East Indies were built for years in the Moro country. All provinces where boat building is carried on reports unlimited supplies of timber close to the places of construction, while shortage of labor is reported only from the province of Cagayan.

Mitsubishi's Shipping on the Yangtze.—The shipping department of the Mitsubishi Company of Japan has been planning to open a through steamship service from Osaka and Kobe to Hankow, and the plan having matured the department is reported to have sent the *Daijun Maru* (2,000 tons) on 11th August as the first steamer in the service. The company was to have begun the service a month or two earlier. But the management felt it a matter of courtesy to notify the Nisshin Kisen Kaisha of the plan, as the new service will naturally in a way come into competition with the Nisshin. The object of the new service is mainly to carry ores from the Tayeh Mines to Japan. The two steamer services will send one ship a month to the Yangtze, and the Nisshin will use the *Yeiryo Maru* to cope with the *Daijun Maru* of the Mitsubishi Company.

INDUSTRY

New Electric Light Company.—A Chinese merchant named Han-yun-hai, residing at Shanchengtzu in Hailung Prefecture, Fengtien Province, has planned to establish an electricity company there. The S. M. R. Co. has consented to invest in the enterprise and the Tiehling Electric Light Co. has agreed to supply the necessary electricity apparatus. More electric light companies are likely to be founded in the near future at Taolu, Tungfeng, Liuho, etc., in the same province.

New Trading Co.—The Kuhara Trading Company which has been promoted by the Kuhara Mining Company as its auxiliary concern has an authorised capital of Y.10,000,000 and has offices at Kobe, Osaka and Tokyo.

Industrial Laboratory for Osaka.—The Japanese Government has decided to establish a State Industrial Laboratory on a site formerly occupied by the Tokyo Glass Company, at Osaka. Operations will be started early in September.

South Manchuria Ill-suited for Cotton.—Experiments have been made by the Kwantung Government and the S. M. R. Co. in the cultivation of the cotton plant in South Manchuria. The native kinds are of poor quality and prove no good for other than domestic uses by the Chinese farmers. Crosses with American and Indian kinds have been sought, but with unsatisfactory results. This is ascribed to the climate and rainfall of Manchuria, which make these districts ill-suited for cotton.

Auto-busses for Tokyo.—The Tokyo Street Auto-bus Company has decided to inaugurate its business. The shares of the company numbering 270,000 have been subscribed to by the company's promoters and endorsers and the rest numbering 30,000 were placed on the market and were oversubscribed by 780,000 shares.

Raw Cotton Shortage in Japan.—It is reported that Japanese spinning companies are experiencing great difficulty in buying raw cotton owing to the advance in price. Annual imports of cotton from the United States amount to about 500,000 bales, while Indian cotton is imported to the quantity of 1,300,000 bales.

Sugar Making in Manchuria.—The South Manchuria Sugar Manufacturing Company has succeeded in turning out 500,000 sacks of granulated sugar for the market in Shantung, Manchuria and Asiatic Russia. The company plans to enlarge its beet sugar plants further.

Tsingtao Becomes Industrial Centre.—Tsingtao is becoming a big industrial centre in China thanks to the steady endeavor on the part of the Japanese Administration to promote industrial undertakings by Japanese businessmen and capitalists in that part of Shantung. The principal factories or industrial enterprises lately established there are reported by the official statement to be the Tsingtao Spinning Mill of the Naigai Cotton Spinning Company; the Tsingtao Branch Brewery of the Dai Nippon Brewery Company; the Tsingtao Flour Mill Company; the Tsingtao Salt Manufacturing Company; the Okura Gumi Flour Mill; the Iwaki Shokai Brick Yard; the Tsingtao Canning Company; the Suzuki Silk Filature; the Tsingtao Branch of the Dairen Ice Company; the Yamaguchi Shokai Canning Factory; the Shinsho Yoko Soap and Oil Department; the Tokusei Yoko Tannery; the Mukai Chemical Works; the Hosei Koshi Iron Works; the Kyugyoku Iron Works; the Tairi Shokai Manufactory; the Towa Oil Mill; the Akashi Match Manufactory; the Mitsui Oil Mill; the Taisei Yoko Albumen Manufactory; the Yamamoto Chemical Industry Company; the Shantung Development Company; the Tsingtao Match Manufacturing Company; the Oriental Oil Manufacturing Company, and others. The Tsingtao brewery of the Dai Nippon Brewery Company turns out 90,000 cases of beer annually. The Tsingtao Flour Mill Company is also of fair importance, turning out flour to the amount of 2,250 bags a day. The Administration has adopted a systematic scheme of encouragement. Land has been leased out to factory owners at very low rents while for a fixed period of time owners of factories are exempted from all sorts of taxes or levies. Electric power is supplied by the Administration to all factories at specially discounted rates. The Shantung Railway has also been instructed to discount freight rates on the raw materials sent to factories.

Mechanical Industries in Japan.—According to investigation made by the Department of Agriculture and Commerce, machine factories now under operation in Japan number 1,593 employing 131,500 workmen. Machines valued at Y. 360,000,000 were produced during the year ended March 31, which doubles approximately the value of the annual production before the war. But the factories are for the most part on a small scale. Of the 1,593 factories only 47 employ over 500 workmen. As for the rest, 134 factories employ 100 to 500 persons; 154 factories from 50 to 100; 221 factories from 30 to 50 and the factories which employ not more than 30 hands number 1,037, or 65 per cent. of all. Classified by localities, the number of factories are: Tokyo, 478; Osaka, 370; Aichi, 134; Hyogo, 98; Fukuoka, 63; Kanagawa, 47; Saitama, 46; Kyoto, 45. Of the 131,500 hands, 124,000 are male and 7,500 female. The following table shows the value of production during the year ended 31st March in various prefectures:

	Yen
Osaka	94,589,000
Hyogo	82,207,000
Tokyo	58,446,000
Nagasaki	31,695,000
Tochigi	29,565,000
Hokkaido	19,379,000
Kanagawa	19,184,000
Fukuoka	9,100,000

Alcohol from Sugar Cane.—It is stated in a report presented by the Niitaka Sugar Manufacturing Company that alcohol so far turned out by sugar mills as a minor side product is assuming great importance, for alcohol from Taiwan is now getting a big market overseas and with the general advance in alcohol prices bring a good profit to sugar mills.

Sugar Dividend.—The Niitaka (Japan) Sugar Manufacturing Company pays a dividend of 22 per cent. per annum. This rate is a decrease of 10 per cent. per annum as compared with the previous term.

Electric Light Debentures.—The Osaka Electric Light Company recently sold new five year debentures worth Y.5,000,000 through several Osaka banks and their agents. The rate of interest is 6½ per cent. per annum, the net price being 98½ per cent.

Insurance in Japan.—At the end of June this year Japanese life assurance companies reported their total issue of policies to be 2,173,123 valued at Y.1,432,185,000. At the same date fire insurance offices had contracts numbering 1,393,784, their risk value being Y.4,286,094,000. Besides, fire offices had contracts on the daily account system numbering 41, the value of the risks insured being Y.476,000. The policies issued by marine insurance offices at the end of June numbered 77,869, the value of risks being Y.1,338,965,000.

Creosoting Plant in Manchuria.—Mr. S. Hori (Director of the S. M. R. Co. Construction Bureau) made a speech at the opening of the Timber Creosoting Plant at Suchiatun Junction (of the S. M. R. Main Line and the Fushun Branch Line) to the following effect:—The privately-owned forests in Hokkaido will have been exhausted in twelve years' time, leaving nothing but the nationally-owned forests in the depths of the mountains to fall back upon. In such event, an enormous outlay would be required for constructing the timber transporting facilities, causing the prices to rise. In Manchuria, there are extensive virgin forests in Kirin and Heilungkiang Provinces, which may be tapped for a substitute supply. However, by the difference in climate and soil, the quality of Kirin and Heilungkiang timber is less enduring. Herein comes the necessity to prolong the durability of timber by the creosoting process. Creosote is produced as a bye-product of the Mond Gas Producer Factory, Fushun. In the near future, what will be put out at the Anshan Steel Works, too, will be also available for the same purpose. Thus, the supply of creosote will be practically unlimited. The timber resources of Manchuria are plentiful. However, demands for timber as material for manufacture of paper, etc., are rapidly increasing, whilst the supply can hardly keep pace with the demand. Such being the case, the art of economizing the use of timber and of prolonging its durability may well be called an enterprise of world-wide importance.

Yalu Lumber Trade.—According to reports received at the Yalu Timber Co., Antung, there are now 100,000 rafts of Yalu lumber ready to be floated down from Tsekiangkou on the Upper Yalu. Drift timber gathered at Antung during the recent flood amounted to 5,000 pieces.

Oil Barrels for China.—Formerly China obtained supplies of oil-barrels exclusively from the United States, but Japanese have been endeavoring to export similar barrels to China for some time, and it is said their efforts are successful, though the annual export amounts to no more than Y.800,000. In addition to increased exports of oil-barrels to China, it is said that the demand, both domestic and foreign, for beer barrels shows a considerable increase, so that manufacturers are now doing a very prosperous business.

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